

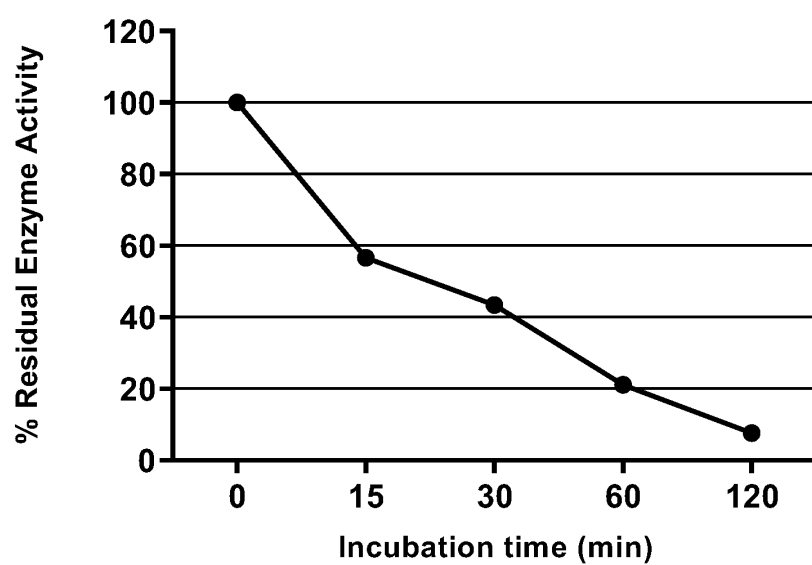
Figure 1

Figure 2

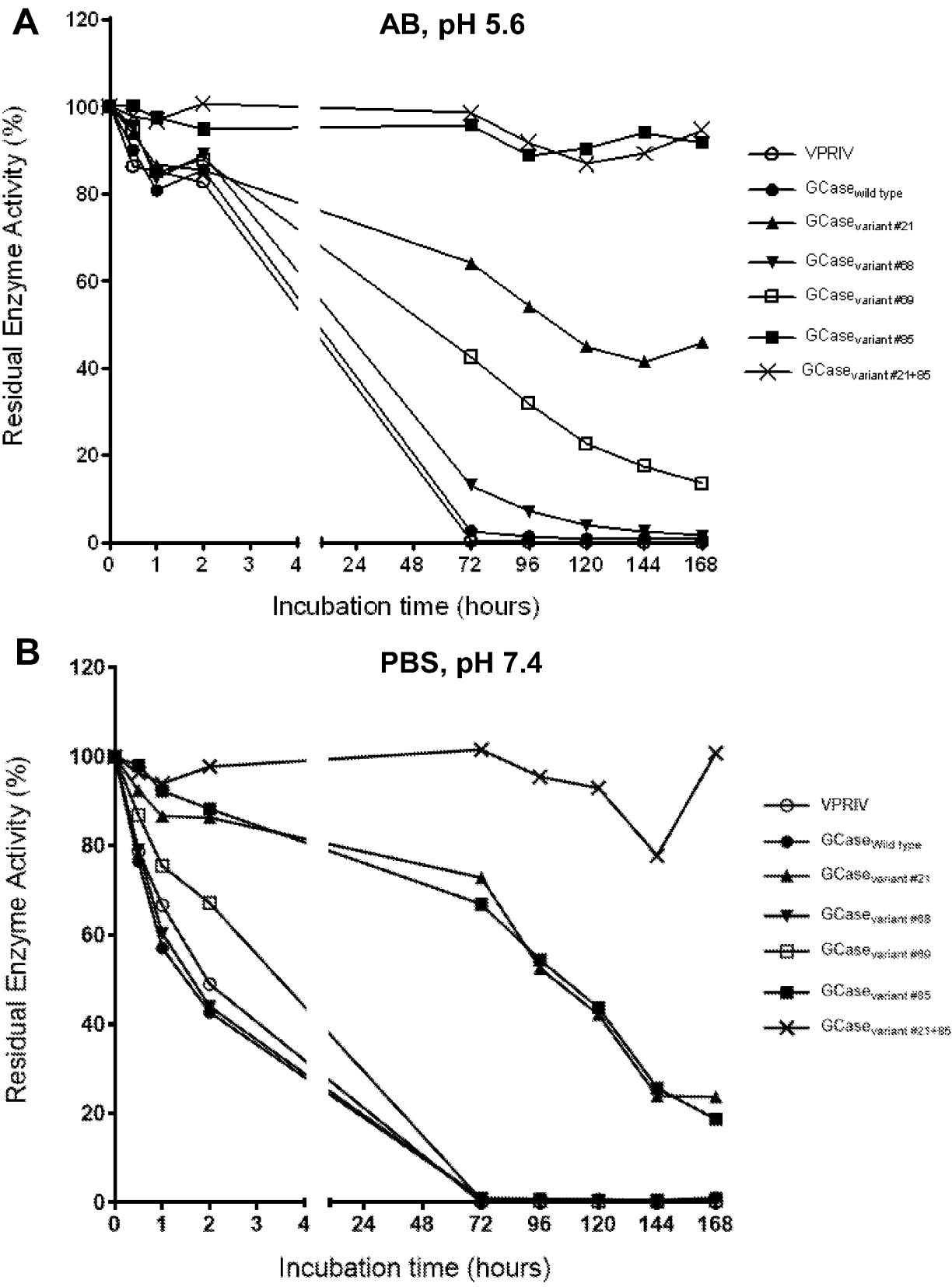


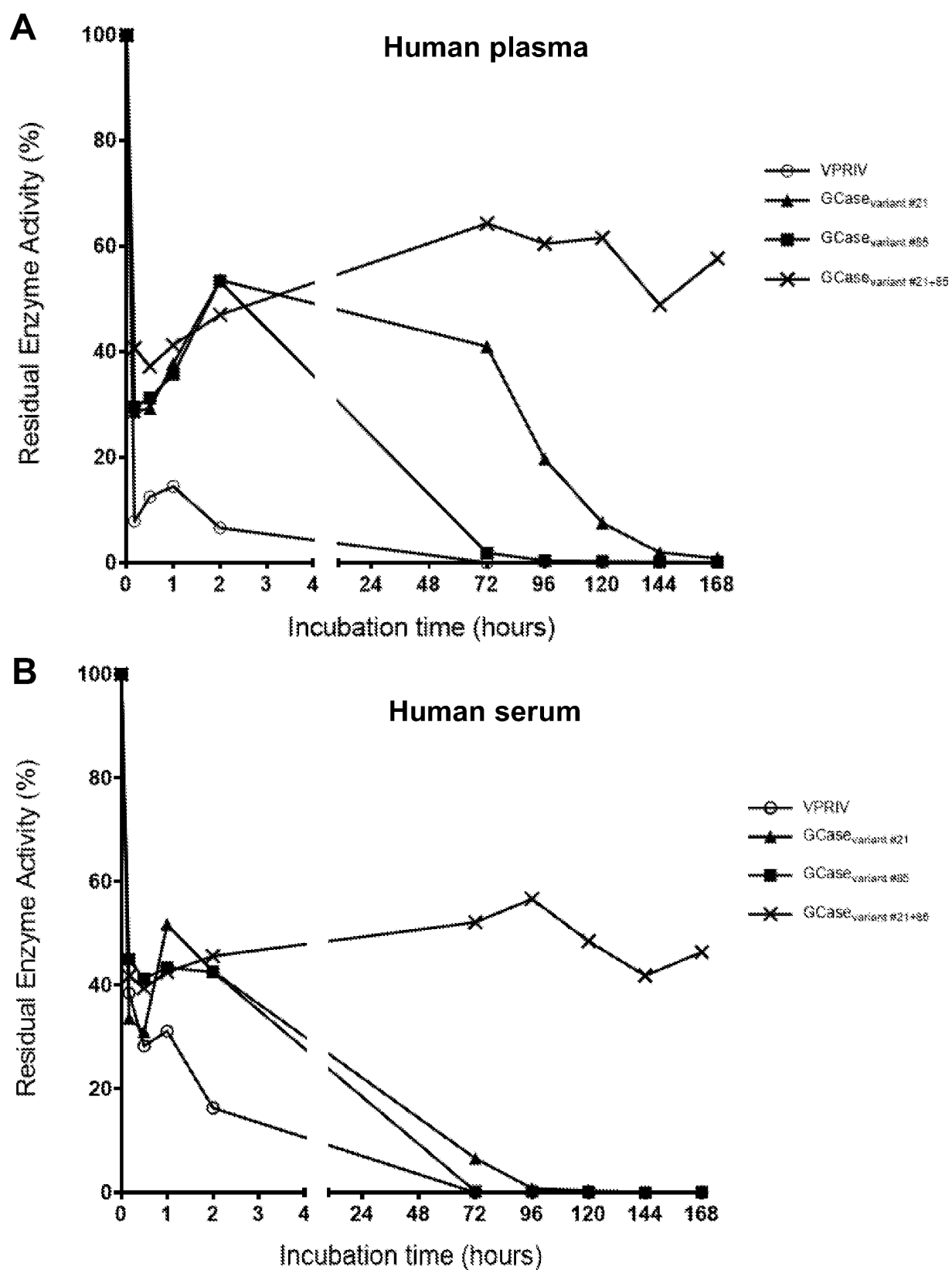
Figure 3

Figure 4

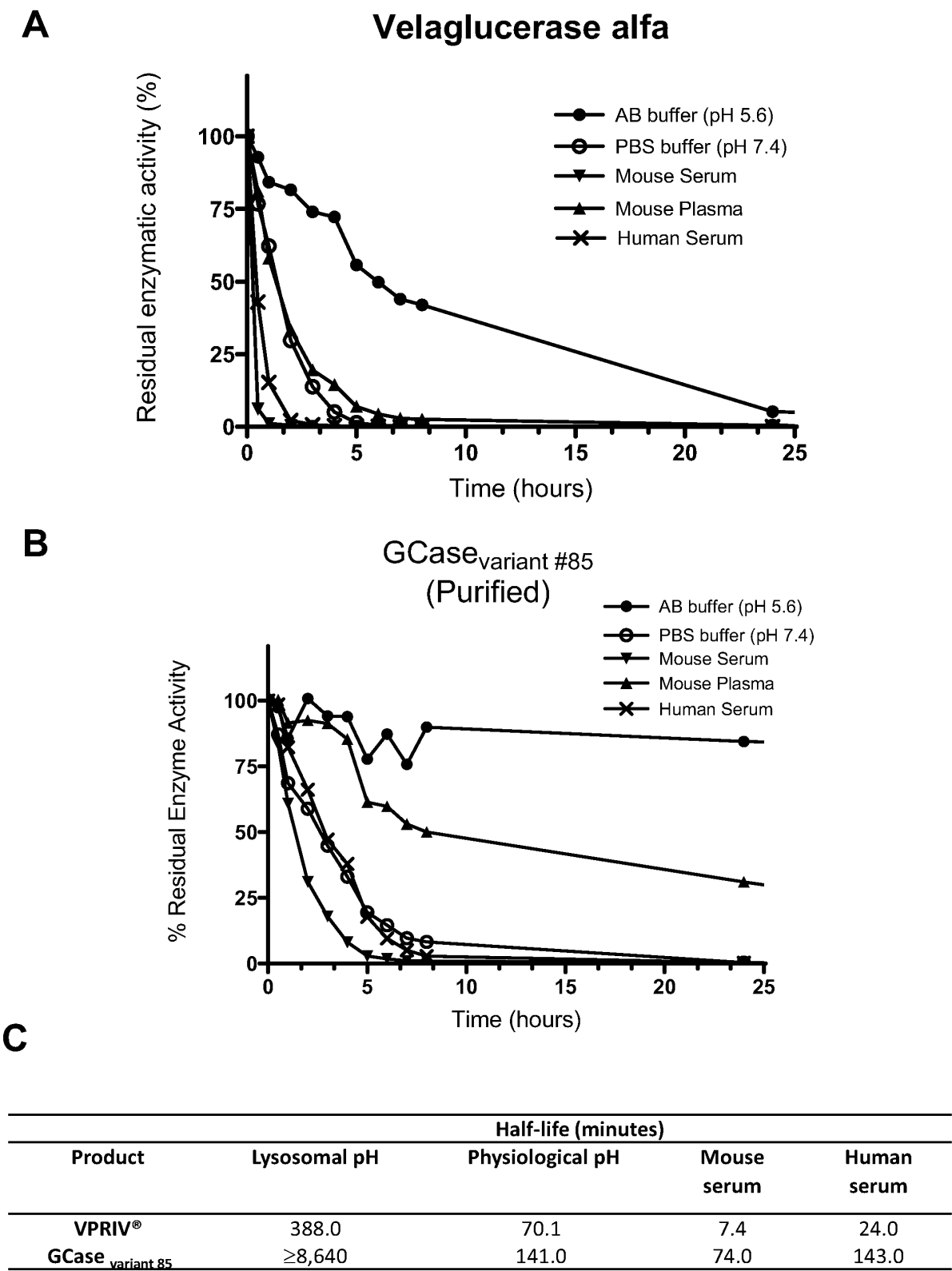
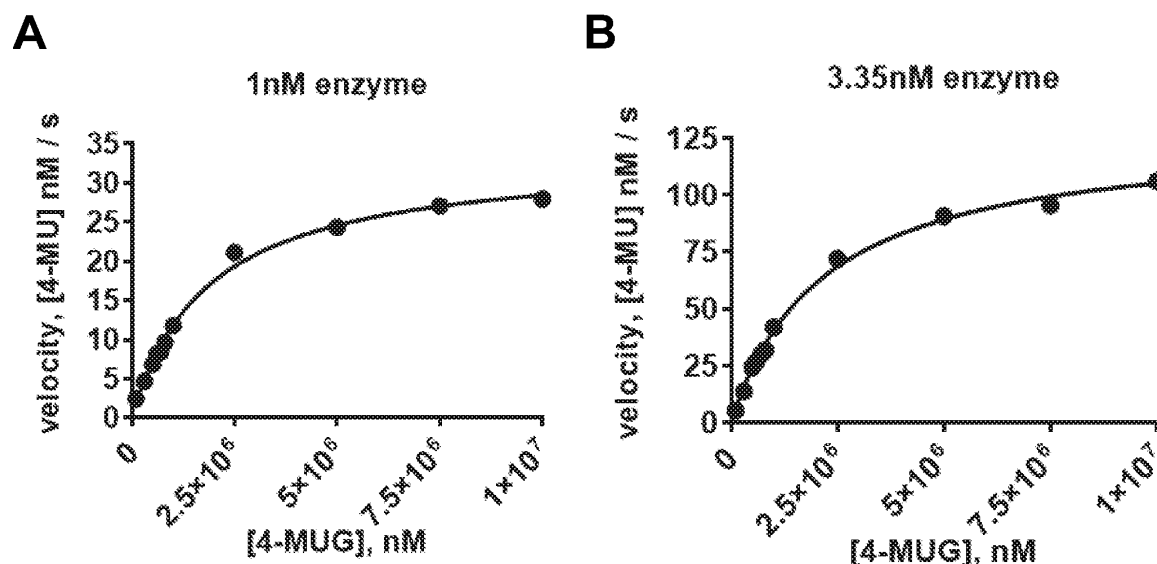


Figure 5**C**

Enzyme	Substrate	Kcat (S ⁻¹)	Km (mM)	Reference
GCase variant #85	4-MUG	36.0 ± 3.2	2.0 ± 0.2	Based on the data shown in Figures 5 A and B
Imiglucerase	4-MUG	N/A	1.8	Liou et al., JBC, 2006 ¹
GCase – wild type	4-MUG	N/A	1.9	Liou et al., JBC, 2006 ¹
Velaglucerase alpha	4-MUG	N/A	1.6 ± 0.2	Xu et al, PLOsone, 2010 ²
Imiglucerase	4-MUG	N/A	1.7 ± 0.3	Xu et al, PLOsone, 2010 ²

¹ Analyses of variant acid beta-glucosidases: effects of Gaucher disease mutations. Liou B1, Kazimierczuk A, Zhang M, Scott CR, Hegde RS, Grabowski GA. J Biol Chem. 2006 Feb 17;281(7):4242-53.

² Comparative Therapeutic Effects of Velaglucerase Alfa and Imiglucerase in a Gaucher Disease Mouse Model. You-Hai Xu, Ying Sun, Sonya Barnes, Gregory A. Grabowsk. PLOS One 2010. <https://doi.org/10.1371/journal.pone.0010750>

Figure 6

MHC Class	Peptide binding category	GCaseWT	Gcase variant #85
HLA I	Strong	19	16
	Intermediate	36	38
HLA II	Strong	36	32
	Intermediate	100	99

Figure 7

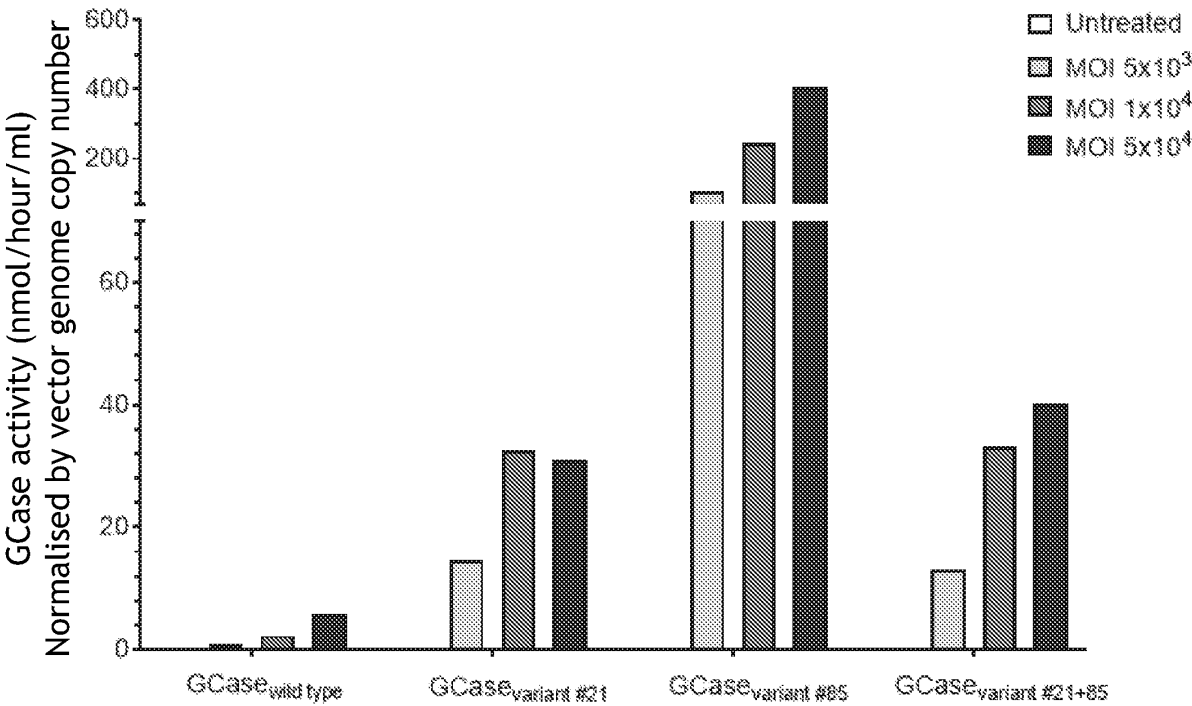


Figure 8

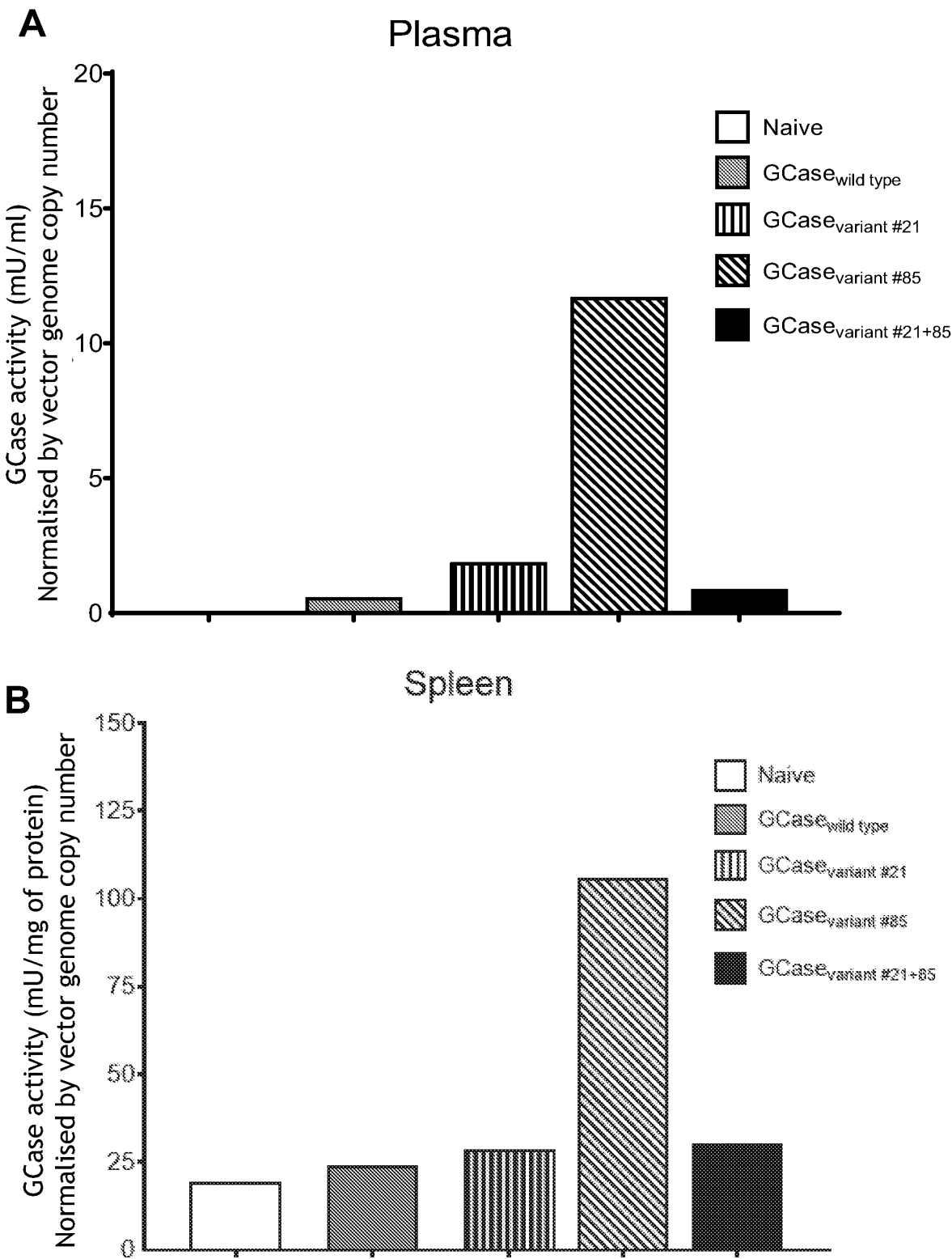


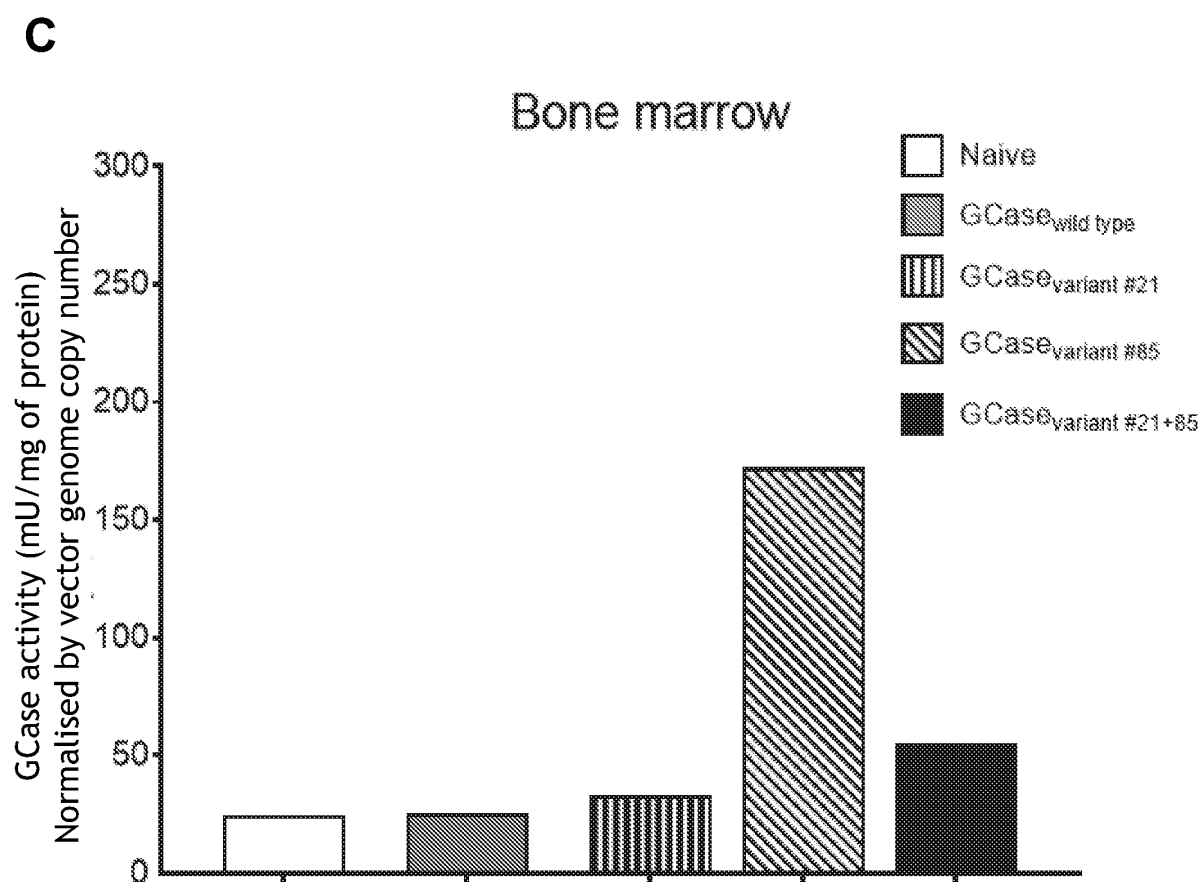
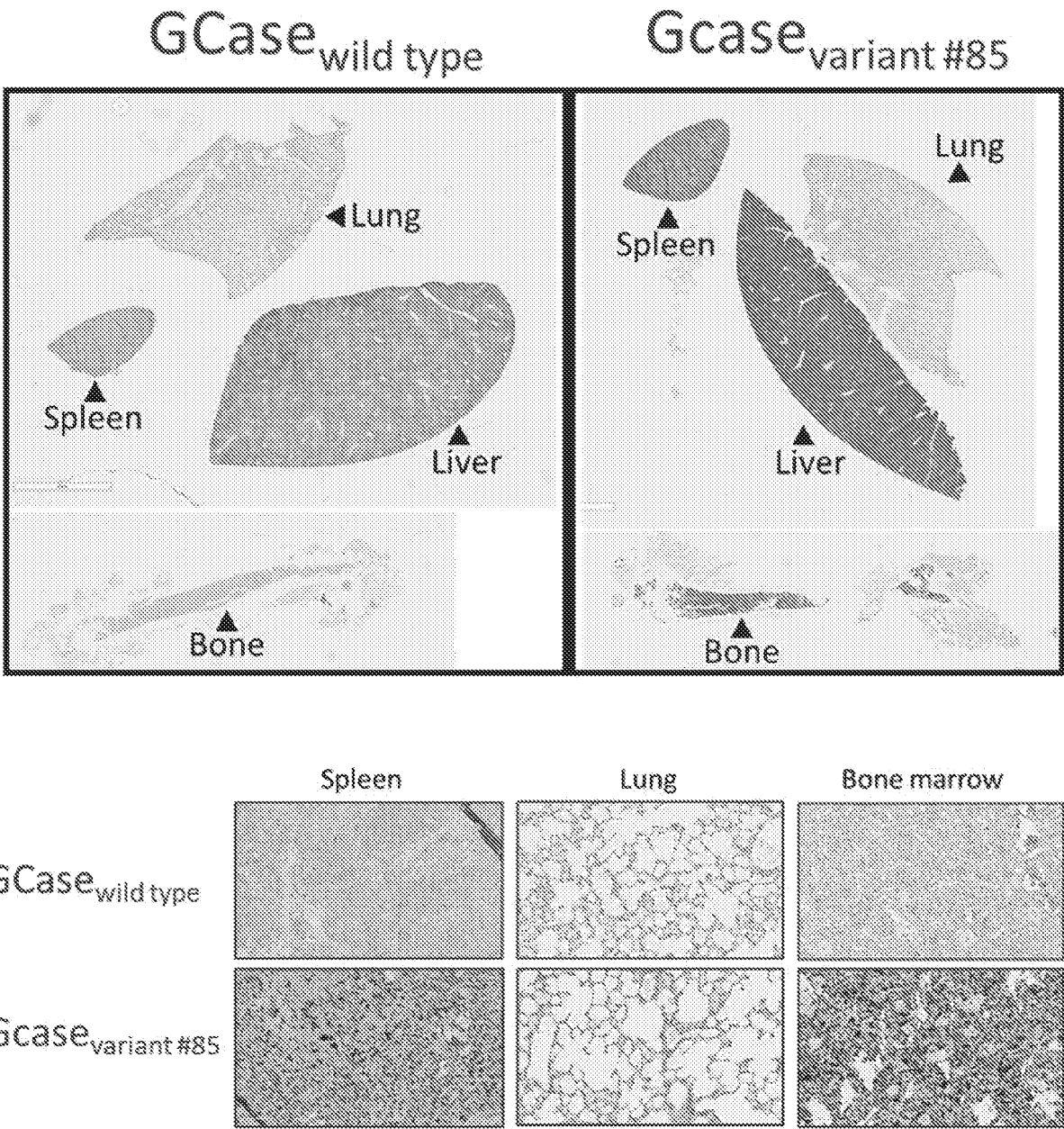
Figure 8 (cont)

Figure 9



10/57

Figure 10

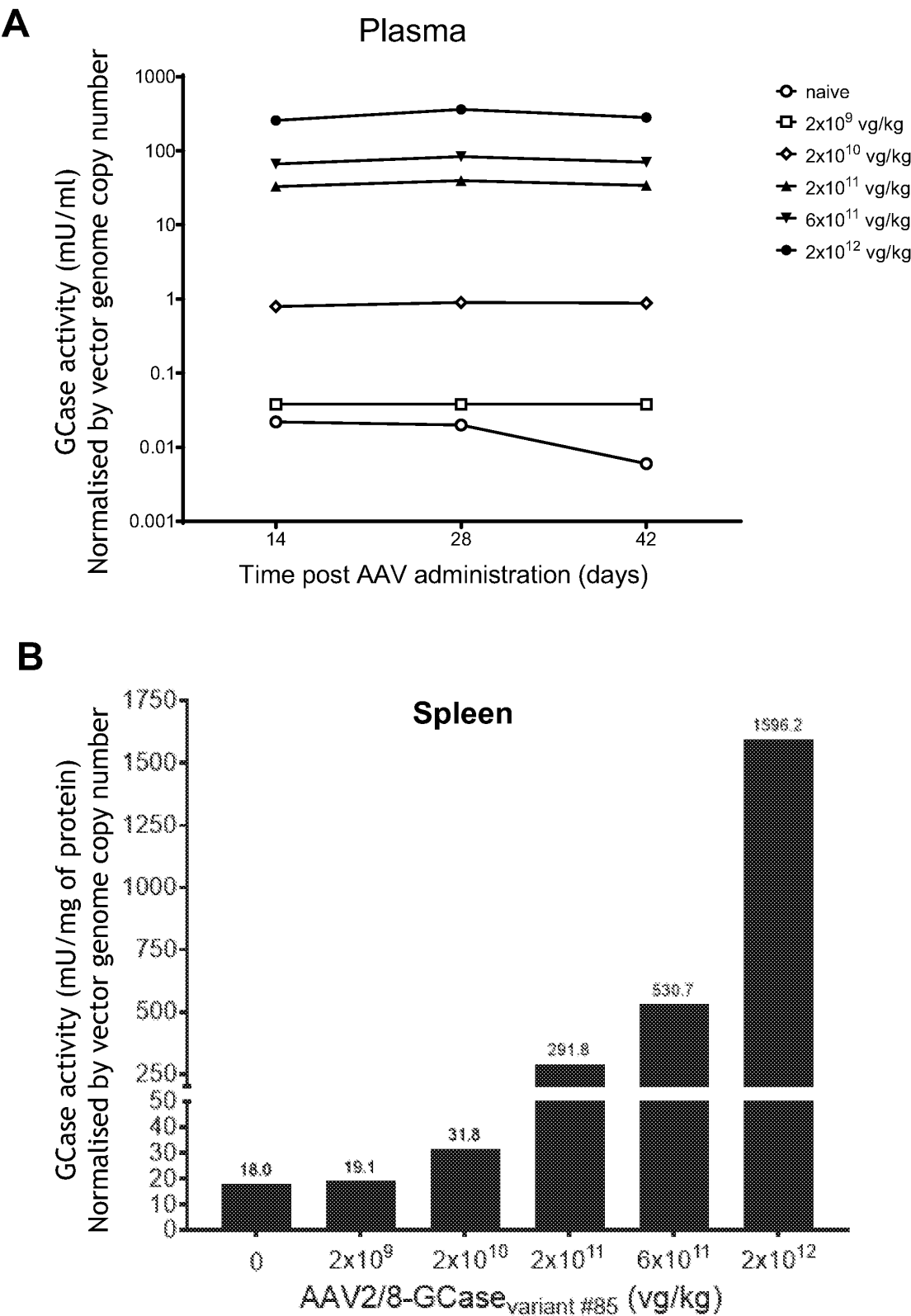
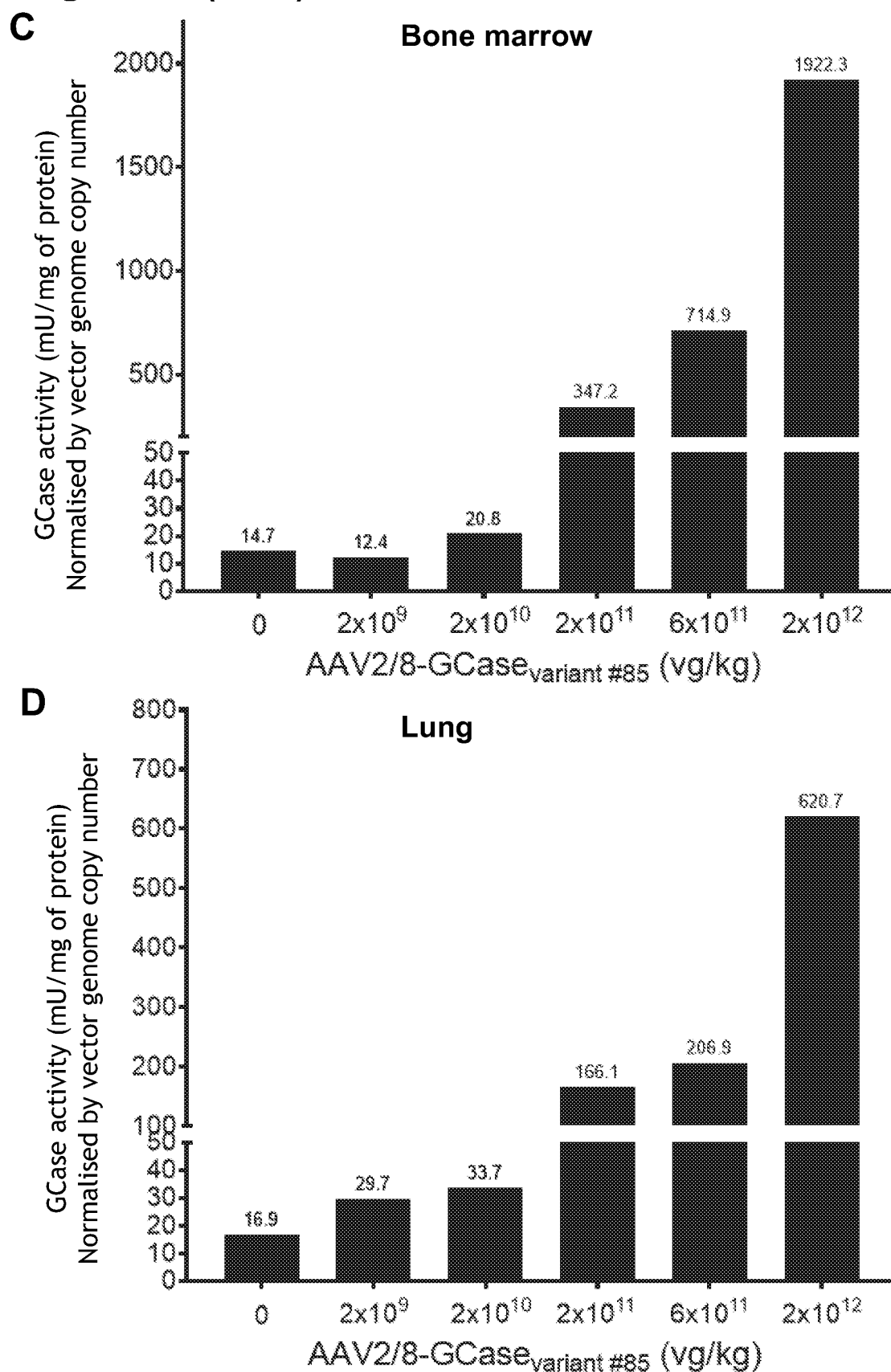


Figure 10 (cont)

12/57

Figure 10 (cont)

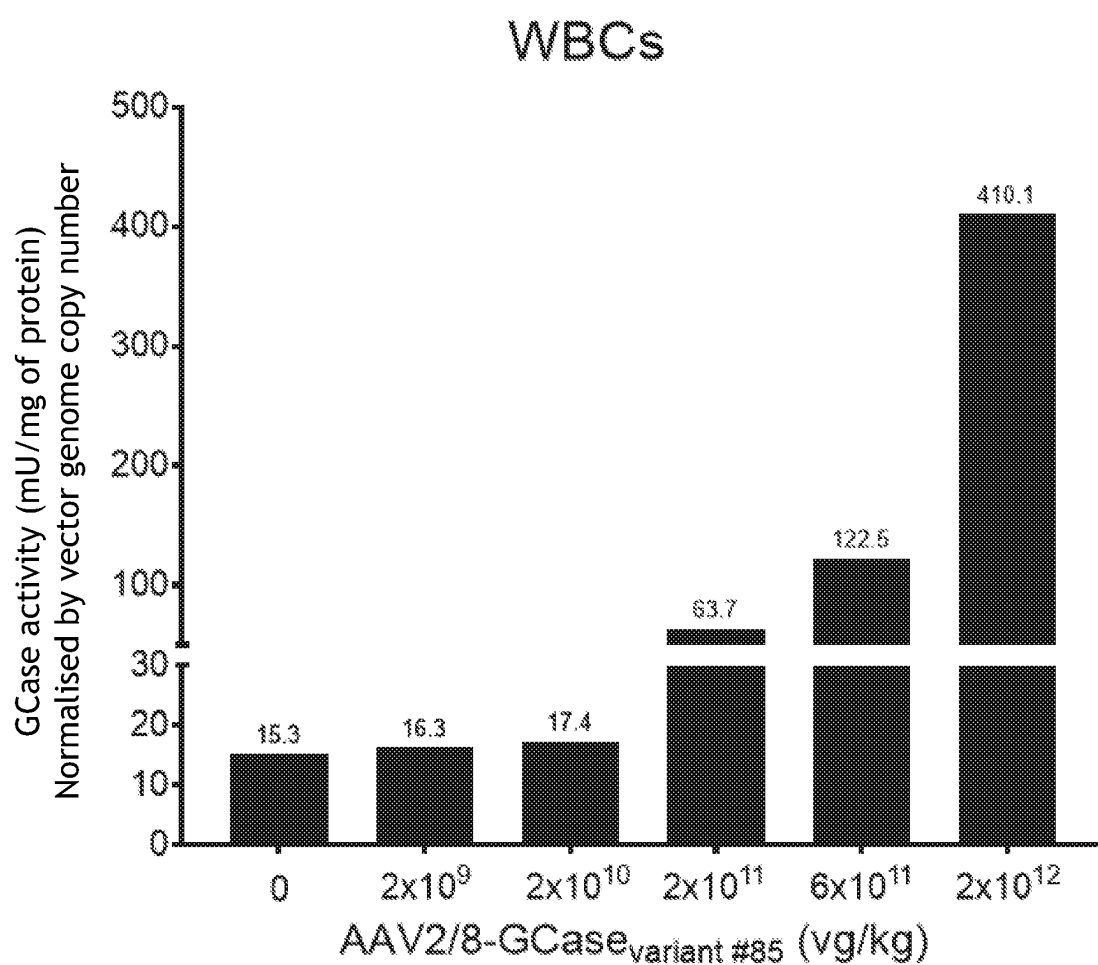
E

Figure 11

13/57

SEQ ID NO: 1

MEFSSPSREECPKPLSRVSIAGSLTGLLLLQAVSWASGARPCIPKSFGYSSVVCVCNATYCD
SFDPPTFPALGTFSRYESTRSGRRMELSMGPIQANHTGTGLLLTLQPEQKFQKVKGFGGA
MTDAAALNILALSPPAQNLLLKSYFSEEGIGYNIIRVPMASCDFSIRTYTYADTPDDFQLHNFS
LPEEDTKLKIPLIHRALQLAQRPVSLASPWTSPWLKTNGAVNGKGSLSKGQPGDIYHQT
WARYFVKFLDAYAEHKLQFWAVTAENEPSAGLLSGYPFQCLGFTPEHQRDIFIARDLGPTLA
NSTHHNVRLMLDDQRLLPHWAKVVLTDPEAAKYVHGIAVHWYLDFLAPAKATLGETHR
LFPNTMLFASEACVGSKFWEQSVRLGSDRGMQYSHSIITNLLYHVVGWTDWNLALNPE
GGPNWVRNFVDSPIIVDITKDTFYKQPMFYHLGHFSKFIPEGSRVGLVASQKNDLDAVAL
MHPDGSVVVVLNRSSKDVPLTIKDPVGFLETISPGYSIHTYLWRRQ

SEQ ID NO: 2

ARPCIPKSFGYSSVVCVCNATYCD SFDPPTFPALGTFSRYESTRSGRRMELSMGPIQANHTG
TGLLLTLQPEQKFQKVKGFGGAMTDAAALNILALSPPAQNLLLKSYFSEEGIGYNIIRVPM
SCDFSIRTYTYADTPDDFQLHNFS LPEEDTKLKIPLIHRALQLAQRPVSLASPWTSPWLK
TNGAVNGKGSLSKGQPGDIYHQTWARYFVKFLDAYAEHKLQFWAVTAENEPSAGLLSGYPF
QCLGFTPEHQRDIFIARDLGPTLANSTHHNVRLMLDDQRLLPHWAKVVLTDPEAAKYVH
GIAVHWYLDFLAPAKATLGETHRLFPNTMLFASEACVGSKFWEQSVRLGSDRGMQYSHS
IITNLLYHVVGWTDWNLALNPEGGPNWVRNFVDSPIIVDITKDTFYKQPMFYHLGHFSKFI
PEGSRVGLVASQKNDLDAVALMHPDGSVVVVLNRSSKDVPLTIKDPVGFLETISPGYSIH
TYLWRRQ

SEQ ID NO: 3

ARPCIPKSFGYSSVVCVCNATYCD SFDPPTFPALGTFSRYESTRSGRRMELSMGPIQANHTG
TGLLLTLQPEQKFQKVKGFGGAMTDAAALNILALSPPAQNLLLKSYFSEEGIGYNIIRVPM
SCDFSIRTYTYADTPDDFQLHNFS LPEEDTKLKIPLIHRALQLAQRPVSLASPWTSPWLK
TNGAVNGKGSLSKGQPGDIYHQTWARYFVKFLDAYAEHKLQFWAVTAENEPSAGLLSGYPF
QCLGFTPEHQRDIFIARDLGPTLANSTHHNVRLMLDDQRLLPHWAKVVLTDPEAAKYVH
GIAVHWYLDFLAPAKATLGETHRLFPNTMLFASEACVGSKFWEQSVRLGSDRGMQYSHS
IITNLLYHVVGWTDWNLALNPEGGPNWVRNFVDSPIIVDITKDTFYKQPMFYHLGHFSKFI
PEGSRVGLVASQKNDLDAVALMHPDGSVVVVLNRSSKDVPLTIKDPVGFLETISPGYSIH
TYLWRRQ

SEQ ID NO: 4

MEFSSPSREECPKPLSRVSIAGSLTGLLLLQAVSWASGARPCIPKSFGYSSVVCVCNATYCD
SFDPPTFPALGTFSRYESTRSGRRMELSMGPIQANHTGTGLLLTLQPEQKFQKVKGFGGA
MTDAAALNILALSPPAQNLLLKSYFSEEGIGYNIIRVPMASCDFSIRTYTYADTPDDFQLNFS
LPEEDTKLKIPLIHRALQLAQRPVSLASPWTSPWLKTNGAVNGKGSLSKGQPGDIYHQT
WARYFVKFLDAYAEHKLQFWAVTAENEPSAGLLSGYPFQCLGFTPEHQRDIFIARDLGPTLA
NSTHHNVRLMLDDQRLLPHWAKVVLTDPEAAKYVHGIAVHWYLDFLAPAKATLGETHR
LFPNTMLFASEACVGSKFWEQSVRLGSDRGMQYSHSIITNLLYHVVGWTDWNLALNPE
GGPNWVRNFVDSPIIVDITKDTFYKQPMFYHLGHFSKFIPEGSRVGLVASQKNDLDAVAL
MHPDGSVVVVLNRSSKDVPLTIKDPVGFLETISPGYSIHTYLWRRQ

Figure 11 (cont)

14/57

SEQ ID NO: 5

MEFSSPSREECPKPLSRVSIMAGSLTGLLLLQAVSWASGARPCIPKSFGYSSVVCVCNATYCD
SFDPPTFPALGTFSRYESTRSGRRMELSMGPIQANHTGTGLLLLTLQPEQKFQKVKGF GGA
MTDAAALNILALSPPAQNLLLKSYFSEEGIGYNIIRVPMASCDFSIRTYTYADTPDDFQLLNFS
LPEEDTKLKIPLIHRALQLAQRPVSLASPWTSPTWLKTNGAVNGKGS LKGQPGDIYHQT
WARYFVKFLDAYAEHKLQFWAVTAENEPSAGLLSGYPFQCLGFTPEHQ RDFIARDLGPTLA
NSTHHNVRLMLDDQRLLLPHWAKVVLTDPEAAKYVHGI AVHWYLDFLAPANATLGETHR
LFPNTMLFASEACVGSKFWEQSVRLGSWDRGMQYSHSIITNLLYHVVGWTDWNLALNPE
GGPNWVRNFVDSPIIVDITKDTFYKQPMFYHLGHFSKFIPEG SQRVGLVASQKNDLDAVAL
MHPDGSAVVVVVLRSSKDVPLTIKDPAVGFLETISPGYSIHTYLWRRQ

SEQ ID NO: 6

gccaggccctgcatccctaagagctttggctacagctctgtggtgtgtgtgcaatgccacctactgtgaca
gctttgacccccccacctttcctgccctgggcaccttcagcagatatgagagcaccaggctctgggaggaggga
tggagctgagcatggggcccatccaggctaatacactggcactggcctgctgctgacctgcagcctgagc
agaagttccagaaagtaaagggtttggaggggcatgactgatgctgctgctctgaacatcctggccctga
gccccctgccagaatctgctgctgaagagctacttctctgaggaggcattggctataacatcatcagggt
gccccatggccagctgtgacttcagcatcaggacctacacctatgctgacaccctgatgatttcagctgcac
aacttcagcctgcctgaggaggataccaagctgaagatcccactgatccacagggtctgcagctggcccag
aggcctgtgagcctgctggccagccccctggaccagccccacttggtgaagaccaatggggctgtgaatggg
aaggggagcctgaagggacagcctggagacatctaccaccagacctgggcccagatactttgtgaagttcctg
gatgcctatgctgagcacaagctgcagttctgggctgtgactgctcagaatgagccttctgctgggctgctgt
ctggctaccccttcaatgcctgggcttcacccctgagcatcagagggacttcattgccaggggacctggggccc
taccctggccaacagcactcaccataatgttaggctgctgatgctggatgaccagaggctgctgctgccccca
ctgggctaagggtggtgctgactgacctgaggctgctaaatatgtgcatggcattgctgtgcattggtacctgg
actttctggctcctgccaaaggccaccctgggggagaccacaggctgttccccaacaccatgctgtttgcctc
tgaggcctgtgtgggcagcaagttctgggagcagctgtgtgaggctgggcagctgggagatgggggatgcagta
cagccacagcatcatcaccaacctgctgtacctatgtggtgggctggactgactggaacctggccctgaacct
tgaggaggagcctaactgggtcagaaactttgtggacagccccatcattgtggacatcaccaaggacacctt
ttacaagcagcccatgttctaccacctgggcccacttcagcaagttcatccctgagggcagccagagagtggg
gctggtggccagccagaagaatgacctggatgctgtggctctgatgcatcctgatggctctgctgtggtggtg
gtgctgaacaggagctctaaggatgtgcctctgacctcaaggatcctgctgtgggcttctggagacctca
gccctggctacagcatccacacctacctgtggaggaggcagtga

SEQ ID NO: 7

gccaggccctgtatccctaagagctttggctacagctcagtagtttgtgtctgtaatgccacatactgtgactc
ctttgacccccctaccttccctgccctgggaaccttcagcagatatgagtcaacaagatcaggaaggaggat
ggagctgtcaatgggacccatccaggctaatacacacaggcacaggcctgctgctgacctgcagccagaac
agaagttccagaaagtgaagggtttggaggagccatgacagatgctgctgctctcaacatcctggccctgt
caccctgccccagaatctgctgctgaagtcatacttctctgaagaaggaattggatataacatcatcagggt
gccccatggccagctgtgacttctccatcaggacctacacctatgctgacaccctgatgatttcagctgcac
aacttcagcctcccagaggaagataccaagctcaagatccctctgatacatagggcactgcagctggccca

Figure 11 (cont)

15/57

gaggcctgtgtcactcctggccagcccctggacatcaccacttggctcaagaccaatggagctgtgaatgg
aaagggatcactcaaggacagcctggagacatctaccaccagacctgggcccagatactttgtgaagttcct
ggatgcctatgctgagcacaagctgcagttctgggcagtgcagctcagaatgagccttctgctggactgctg
tcaggataccccttccagtgtctgggcttcaccctgaacatcagagggacttcattgccaggggacctgggac
ctacccttgccaactcaactcaccacaatgtcaggctgctcatgctggatgaccagaggctgctgctgcccc
actgggccaaggtggtgctgacagaccagaagctgctaaatatgtgcatggcattgctgtgcattggtacct
ggacttctggctccagccaaggccaccctgggagagacacacaggctgttcccaacaccatgctctttgc
ctctgaggcctgtgtggctccaagttctgggagcagtcagtgaggctgggctcctgggataggggaatgcag
tacagccacagcatcatcacaacctcctgtacctgtggtgggctggactgactggaacctggccctgaac
cctgaaggaggacccaactgggtcagaaatgttgaggactcacccatcattgtggacatcaccaaggacaca
ttctacaagcagcccatgttctaccacctgggcccacttcagcaagttcatccctgaggggctcccagagggtgg
gactggtggcctcacagaagaatgacctggatgcagtgggcctgatgcacctgatggctctgctgtggtggt
tgtgctgaatagatcctctaaggatgtgcctctgacctcaaggatcctgctgtgggcttctggagacaatc
tcacctggctactccatccacacctacctgtggaggaggcagtga

SEQ ID NO: 8

gccaggccctgcatccctaagagctttggctacagctctgtggtgtgtgtgcaatgccacatactgtgact
cctttgacccccacctttcctgcccctgggcacattctccagatatgagagcacaagatctgggagaagga
tgagctgagcatggggcccatccaggctaatacactggcacaggcctgctgctgacctgcagcctgaac
agaagtttcagaaagtgaagggtttggaggggccatgacagatgctgctgctctgaatatcctggccctgtc
acccctgcccagaatctgctgctgaagagctactttcagaagaaggaattggatataatatcatcagagt
gccccatggccagctgtgactttccatcagaacctacacctatgcagacaccctgatgattttcagctgcac
aattttagcctgcctgaggaagataccaagctgaagatacccctgattcacaggggccctgcagctggcccag
aggcctgtttcactgctggccagcccctggacatcaccacactggctgaagaccaatggagctgtgaatggg
aaggggtcactgaaggacagcctggagacatctaccaccagacctgggcccagatactttgtgaagtttctg
gatgcctatgctgagcacaagctgcagttttgggcagtgcagctcagaatgagccttcagctgggctgctgt
caggatacccctttcagtgctgggctttaccctgaacatcagagggactttattgccaggggacctgggccc
tacctggccaatagcaccaccataatgtgaggttgctgatgctggatgaccagaggctgctgctgccccca
ctgggcaaagggtggtgctgacagaccctgaagcagctaaatatgttcatggcattgctgtgcattggtacctg
gactttctggctcctgccaaggccaccctgggggagacacacaggctgttcccaataccatgctgtttgcct
ctgaggcctgtgtgggctccaagttttgggagcagctctgtgaggctgggctcctgggatagagggatgcagta
cagccacagcatcatccaatctgctgtacctgtggtgggctggactgactggaatctggccctgaatcct
gaaggaggacctaactgggtcaggaatgttgaggacagcccatcattgtggacatcaccaaggacaccttt
tacaagcagcccatgtttaccacctgggcccactttagcaagtttattcctgagggtcccagagagtggggc
tggttgccagccagaagaatgacctggatgcagtgggcactgatgcacctgatggctcagctgttggtggt
gctgaatagatccagcaaggatgtgcctctgacctcaaggatcctgctgtgggcttctggagacaatctca
cctggctactccattcacacctacctgtggagaaggcagtga

SEQ ID NO: 9

gccaggccttgcatcccaaagtctttcggctacagctccgtggtgtgcgtgtgcaacgccacctattgtgact
ccttcgatccccctacctttccgcccctgggcacattttctagatacagagtctacacgcagcgccggagaat

16/57

Figure 11 (cont)

ggagctgagcatgggcccctatccaggccaatcacacaggaacaggcctgctgctgaccctgcagccagagc
agaagttccagaaggtgaagggctttggcggagccatgacagatgcagccgccctgaacatcctggccctgt
ccccacccgcccagaatctgctgctgaagtcctacttctctgaggaggcatcggctataacatcatccgggt
gcccattggccagctgcgacttttccatcagaacctacacatatgccgatacccctgacgatttccagctgca
caatttttccctgccagaggaggatacaaagctgaagatccccctgattcaccggggccctgcagctggcaca
gcgggccctgagcctgctggccagcccctggacctcccctacatggctgaagaccaacggcgccgtgaatg
gcaagggctctctgaagggacagcctggcgacatctaccaccagacatgggccaagatatctcgtgaagttc
tggatgcctacgccgagcacaagctgcagttctggggcctgacagcacagaatgagccttctgccggcctgc
tgagcggctatcccttccagtgcctgggctttacacctgagcaccagcgggactttatcgccagagatctggg
cccaaccctggccaactccacacaccacaatgtgaggctgctgatgctggacgatcagcgctgctgctgcc
tactgggccaaggtgggtgctgaccgacccagaggccgccaagtacgtgcacggcatcgccgtgactggta
tctggatttctggcacctgcaaaggccaccctgggagagacacaccggctgttccctaaccatgctgtt
gccagcgaggcctgcgtgggctccaagttttgggagcagtcctgaggctgggatcttgggacagaggcatg
cagtactcccactctatcatcaccaatctgctgtatcacgtgggtgggctggacagactggaacctggccctga
atccagagggcgggcccaactgggtgagaaatttctggtgtagcccatcatcgtggacatcaccaaggata
cattctacaagcagccaatgttttatcacctgggccaacttctctaagtttatccctgagggcagccagagggt
gggcctgggtggccagccagaagaacgacctggatgccgtggccctgatgcacctgatggctccgccgtggt
ggtggtgctgaatcgctctagcaaggacgtgcctctgaccatcaaggatccagccgtgggatttctggagact
atttcacctggctattcaattcatacctacctgtggaggaggcagtga

SEQ ID NO: 10

atggagttttcaagtccttccagagaggaatgtcccaagcctttgagtagggtaagcatcatggctggcagcc
tcacaggattgcttctacttcaggcagtgctgtgggcatcaggtgccaggccctgcacccctaagagctttgg
ctacagctctgtggtgtgtgtgtgcaatgccacctactgtgacagctttgacccccccaccttctgcctgg
gcaccttcagcagatatgagagcaccaggtctgggaggaggatggagctgagcatggggcccatccaggct
aatcacactggcactggcctgctgctgaccctgcagcctgagcagaagttccagaaagtaaagggtttgga
ggggccatgactgatgctgctgctgaacatcctggccctgagccccctgccagaatctgctgctgaag
agctacttctctgaggagggtcattggctataacatcatcagggtgcccattggccagctgtgacttcagcatca
ggacctacacctatgctgacaccctgatgatttccagctgcacaacttcagcctgcctgaggaggatacca
agctgaagatcccactgatccacagggtctgcagctggcccagaggcctgtgagcctgctggccagcccct
ggaccagccccacttggctgaagaccaatggggctgtgaatgggaaggggagcctgaaggacagcctgga
gacatctaccaccagacctgggccaagatactttgtgaagttcctggatgcctatgctgagcacaagctgcagt
tctgggctgtgactgctcagaatgagccttctgctgggctgctgctggctaccccttccaatgcctgggcttc
accctgagcatcagagggacttcattgccaggacctgggcccctaccctggccaacagcactcaccataat
gttaggctgctgatgctggatgaccagaggctgctgctgccccactgggctaaggtgggtgctgactgaccctg
aggctgctaaatatgtgcatggcattgctgtgattggctacctggacttctggctcctgccaaggccaccctg
ggggagacccacaggctgttccccaacacatgctgtttgcctctgaggcctgtgtgggagcaagttctggg
agcagtctgtgaggctgggagctgggtagggggatgcagtacagccacagcatcatcaccaacctgctgt
accatgtggtgggctggactgactggaacctggccctgaacctgagggaggacctaactgggtcagaaact
ttgtggacagccccatcattgtggacatcaccaaggacaccttttacaagcagcccatgttctaccacctggg

Figure 11 (cont)

17/57

ccacttcagcaagttcatccctgagggcagccagagagtggggctggtggccagccagaagaatgacctgg
atgctgtggctctgatgcacctgatggctctgctgtggtggtggtgctgaacaggagctctaaggatgtgcct
ctgaccatcaaggatcctgctgtgggcttcctggagaccatcagccctggctacagcatccacacctacctgt
ggaggaggcagtga

SEQ ID NO: 11

atggagttttcaagtccttccagagaggaatgtcccaagcctttgagtagggtaagcatcatggctggcagcc
tcacaggattgcttctacttcaggcagtgctgtgggcatcaggtgccaggccctgtatccctaagagctttgg
ctacagctcagtagtttgtgtctgtaatgccacatactgtgactcctttgacccccctacctccctgccctgg
gaaccttcagcagatatgagtcaacaagatcaggaaggaggatggagctgcaatgggacccatccaggct
aatcacacaggcacaggcctgctgctgaccctgcagccagaacagaagttccagaaagtgaagggatttgg
aggagccatgacagatgctgctgctcctcaacatcctggccctgtcacccctgccagaatctgctgctgaa
gtcatacttctctgaagaaggaattggatataacatcatcagggtgccccatggccagctgtgacttctccatc
aggacctacacctatgctgacacccctgatgatttccagctgcacaacttcagcctccagaggaagatacc
aagctcaagatccctctgatacatagggcactgcagctggcccagaggcctgtgtcactcctggccagcccc
tggacatcacccacttggctcaagaccaatggagctgtgaatggaaagggatcactcaaggagacagcctgg
agacatctaccaccagacctgggcccagatactttgtgaagttcctggatgcctatgctgagcacaagctgca
gttctgggcagtgacagctcagaatgagccttctgctggactgctgtcaggatacccccttcagtgctgggc
ttcacccctgaacatcagagggaacttcattgccagggaactgggacctacccttgccaactcaactcaccac
aatgtcaggctgctcatgctggatgaccagaggctgctgctgccccactggggccaaggtggtgctgacagac
ccagaagctgctaaatatgtgcatggcattgctgtgattggtacctggacttctggctccagccaaggcca
ccctgggagagacacacaggctgttccccaacaccatgctctttgcctctgaggcctgtgtgggctccaagtt
ctgggagcagtcagtgaggctgggctcctgggataggggaatgcagtacagccacagcatcatcacaacc
tcctgtaccatgtggtgggctggactgactggaacctggccctgaacctgaaggaggaccaactgggtca
gaaatttttggactcacccatcattgtggacatcaccaaggacacattctacaagcagcccatgttctacca
cctgggcccacttcagcaagttcatccctgagggctcccagagggtgggactggtggcctcacagaagaatga
cctggatgagtgccctgatgcatcctgatggctctgctgtggtggtgtgctgaatagatcctctaaggatg
tgctctgaccatcaaggatcctgctgtgggcttcctggagacaatctcacctggctactccatccacaccta
cctgtggaggaggcagtga

SEQ ID NO: 12

atggagttttcaagtccttccagagaggaatgtcccaagcctttgagtagggtaagcatcatggctggcagcc
tcacaggattgcttctacttcaggcagtgctgtgggcatcaggtgccaggccctgcatccctaagagctttgg
ctacagctctgtggtgtgtgtgcaatgccacatactgtgactcctttgacccccccaccttctgccctgg
gcacattctccagatatgagagcacaagatctgggagaaggatggagctgagcatggggcccatccaggct
aatcacactggcacaggcctgctgctgaccctgcagcctgaacagaagtttcagaaagtgaagggatttggga
ggggccatgacagatgctgctgctgaatatcctggccctgtcacccctgccagaatctgctgctgaaga
gctacttttcagaagaaggaattggatataatatcatcagagtggccatggccagctgtgacttttccatcag
aacctacacctatgcagacacccctgatgattttcagctgcacaattttagcctgcctgaggaagataccaa
gctgaagatacccctgattcacagggccctgcagctggcccagaggcctgttctactgctggccagcccctg
gacatcacccacctggctgaagaccaatggagctgtgaatgggaaggggtcactgaaggagacagcctggag

Figure 11 (cont)

18/57

acatctaccaccagacctgggccagatactttgtgaagtttctggatgcctatgctgagcacaagctgcagtt
ttgggcagtgacagctcagaatgagccttcagctgggctgctgtcaggatacccctttcagtgctgggcttt
accctgaacatcagagggactttattgccagggacctgggccctaccctggccaatagcaccaccataat
gtgaggttgctgatgctggatgaccagaggctgctgctgccccactgggcaaagggtggtgctgacagacct
gaagcagctaaatatgttcatggcattgctgtgcatgggtacctggactttctggctcctgccaaggccacct
gggggagacacacaggctgtttccaataaccatgctgtttgctctgaggcctgtgtgggctccaagtttgg
gagcagtctgtgaggctgggctcctgggatagagggatgcagtacagccacagcatcatcaccaatctgctg
taccatgtggtgggctggactgactggaatctggccctgaatcctgaaggaggacctaactgggtcaggaat
tttgtggacagccccatcattgtggacatcaccaaggacacctttacaagcagcccatgttttaccacctgg
gccacttttagcaagtttattcctgagggtcccagagagtggggctgggtgcccagccagaagaatgacctgg
atgcagtggcactgatgcacctgatggctcagctgttgtgggtggtgctgaatagatccagcaaggatgtgcc
tctgacctcaaggatcctgctgtgggctttctggagacaatctcacctggctactccattcacacctacctgt
ggagaaggcagtg

SEQ ID NO: 13

atggagttttcaagtccttccagagaggaatgtcccaagcctttgagtagggtaagcatcatggctggcagcc
tcacaggattgcttctacttcaggcagtgctgtgggcatcaggtgccaggccttgcatcccaaagtctttcgg
ctacagctccgtggtgtgctgtgcaacgccacctattgtgactccttcgatccccctacctttccgacctgg
gcacattttctagatacaggtctacacgcagcggccggagaatggagctgagcatgggacctatccaggcca
atcacacaggaacaggcctgctgtgacctgcagccagagcagaagttccagaagggtgaagggtttggc
ggagccatgacagatgcagccgccctgaacatcctggccctgtccccaccgcccagaatctgctgtgaag
tcctacttctctgaggagggtcatcggtataacatcatccgggtgcccattggccagctgcgacttttccatca
gaacctacacatatgccgatacccctgacgatttccagctgcacaatttttccctgccagaggaggatacaa
agctgaagatccccctgattcacggggccctgcagctggcacagcggcccgtagcctgctggccagccccct
ggacctcccctacatggctgaagaccaacggcgccgtgaatggcaagggtctctgaagggtacagcctggc
gacatctaccaccagacatgggcccagataatttctgtaagtttctggatgcctacgccgagcacaagctgcag
ttctgggcccgtgacagcacagaatgagccttctgccggcctgctgagcggctatcccttccagtgctgggct
ttacacctgagcaccagcgggactttatcgccagagatctgggcccaccctggccaactccacacaccac
aatgtgaggctgctgatgctggacgatcagcgcctgctgctgcctcactgggccaagggtggtgctgaccgac
ccagaggccccaagtacgtgcacggcatcgccgtgactgggtatctggatttctggcacctgcaaaggcc
accctgggagagacacaccggctgttccctaacacctgctgtttgccagcaggcctgcgtgggctccaag
ttttgggagcagtcctgaggctgggatcttgggacagaggcatgcagtactccactctatcatcaccaatc
tgctgtatcacgtggtgggctggacagactggaacctggccctgaatccagagggtgggccccaaactgggtga
gaaatttctggtatagccccatcatcgtggacatcaccaaggatacttctacaagcagccaatgttttatca
cctgggcccacttcttaagtttatccctgagggcagccagagggtgggacctgggtggccagccagaagaacga
cctggatgccgtggccctgatgcacctgatggctccgctgggtgggtgctgaatcgtctagcaaggac
gtgcctctgacctcaaggatccagccgtgggatttctggagactatttcacctggctattcaattcataccta
cctgtggaggaggcagtg

SEQ ID NO: 14

gccaggccctgcatccctaagagctttggctacagctctgtggtgtgtgtgtgcaatgccacctactgtgaca

Figure 11 (cont)

19/57

gctttgacccccacctttcctgccctgggcaccttcagcagatatgagagcaccaggtctgggaggagga
tggagctgagcatggggcccatccaggctaatacactggcactggcctgctgctgacctgcagcctgagc
agaagttccagaaagtaaagggctttggaggggcatgactgatgctgctgctgaacatcctggccctga
gccccctgccagaatctgctgctgaagagctacttctctgaggaggcattggctataacatcatcagggt
gccccatggccagctgtgacttcagcatcaggacctacacctatgctgacaccctgatgatttccagctgcac
aacttcagcctgcctgaggaggataccaagctgaagatcccactgatccacagggcctctgcagctggcccag
aggcctgtgagcctgctggccagcccctggaccagccccacttggctgaagaccaatggggctgtgaatggg
aaggggagcctgaagggacagcctggagacatctaccaccagacctgggcccagatactttgtgaagtctctg
gatgcctatgctgagcacaagctgcagttctgggctgtgactgctgagaatgagccttctgctgggctgctgt
ctggctacccctccaatgctgggcttcaccctgagcatcagagggacttcattgccagggacctggggccc
taccctggccaacagcactcaccataatgttaggctgctgatgctggatgaccagaggctgctgctgccccca
ctgggctaaggtggtgctgactgacctgaggctgctaaatatgtgcatggcattgctgtgattgctacctgg
actttctggctcctgccaaaggccaccctgggggagaccacaggctgttccccaacaccatgctgtttgcctc
tgagtgtgtgtgggcagcaagtctggggagcagctgtgtgaggctgggcagctgggatagggggatgcagta
cagccacagcatcatcacaacctgctgtacctatgtgtgggctggactgactggaacctggccctgaacct
tgaggaggagcctaactgggtcagaaactttgtggacagccccatcattgtggacatcaccaaggacacctt
ttacaagcagcccatgttctaccacctgggcccacttcagcaagttcatccctgagggcagccagagagtggg
gctggtggccagccagaagaatgacctggatgctgtggctctgatgcatcctgatggctctgctgtggtggtg
gtgctgaacaggagctctaaggatgtgcctctgacctcaaggatcctgctgtgggcttctggagaccatca
gccctggctacagcatccacacctacctgtggaggaggcagtga

SEQ ID NO: 15

gccaggccctgtatccctaagagctttggctacagctcagtagtttgtgtctgtaatgccacatactgtgactc
ctttgacccccctaccttccctgccctgggaaccttcagcagatatgagtcaacaagatcaggaaggaggat
ggagctgtcaatgggacccatccaggctaatacacacaggcacaggcctgctgctgacctgcagccagaac
agaagttccagaaagtgaagggtttggaggagccatgacagatgctgctgcttcaacatcctggccctgt
caccctgccccagaatctgctgctgaagtcatacttctctgaagaaggaattggatataacatcatcagggt
gccccatggccagctgtgacttctccatcaggacctacacctatgctgacaccctgatgatttccagctgcac
aacttcagcctcccagaggaagataccaagctcaagatccctctgatacatagggcactgcagctggccca
gaggcctgtgtcactcctggccagcccctggacatcaccacttggctcaagaccaatggagctgtgaatgg
aaagggatcactcaagggacagcctggagacatctaccaccagacctgggcccagatactttgtgaagttcct
ggatgcctatgctgagcacaagctgcagttctgggcagtgcagctgaaaatgagccttctgctggactgctg
tcaggatacccttccagtgtctgggcttcaccctgaacatcagagggacttcattgccagggacctgggac
ctacccttgccaactcaactcaccacaatgtcaggctgctcatgctggatgaccagaggctgctgctgcccc
actgggccaaggtggtgctgacagaccagaagctgctaaatatgtgcatggcattgctgtgattgctacct
ggacttctggctccagccaaggccaccctgggagagacacaggctgttccccaacaccatgctctttgc
ctctgagtgtgtgtgggctccaagttctgggagcagtcagtgaggctgggctcctgggataggggaatgcag
tacagccacagcatcatcacaacctcctgtacctatgtgtgggctggactgactggaacctggccctgaac
cctgaaggaggaccaactgggtcagaaatttgtggactcaccatcattgtggacatcaccaaggacaca
ttctacaagcagcccatgttctaccacctgggcccacttcagcaagttcatccctgagggtctccagagggtgg
gactggtggcctcacagaagaatgacctggatgcagtgccctgatgcatcctgatggctctgctgtggtggt
tgtgtgaatagatcctctaaggatgtgcctctgacctcaaggatcctgctgtgggcttctggagacaatc
tcacctggctactccatccacacctacctgtggaggaggcagtga

Figure 11 (cont)

20/57

SEQ ID NO: 16

gccaggccctgcatccctaagagctttggctacagctctgtggtgtgtgtgcaatgccacatactgtgact
cctttgacccccccacctttcctgccctgggcacattctccagatatgagagcacaagatctgggagaagga
tggagctgagcatggggcccatccaggctaatacactggcacaggcctgctgctgaccctgcagcctgaac
agaagtttcagaaagtgaagggatttggaggggcatgacagatgctgctgctctgaatatcctggccctgtc
acccctgcccagaatctgctgctgaagagctactttcagaagaaggaattggatataatatcatcagagt
gccccatggccagctgtgacttttccatcagaacctacacctatgcagacaccctgatgattttcagctgcac
aattttagcctgcctgaggaagataccaagctgaagatacccctgattcacagggccctgcagctggcccag
aggcctgtttcactgctggccagcccctggacatcacccacctggctgaagaccaatggagctgtgaatggg
aaggggtcactgaagggacagcctggagacatctaccaccagacctgggcccagatactttgtgaagtttctg
gatgcctatgctgagcacaagctgcagttttgggcagtgacagctgaaaatgagccttcagctgggctgctgt
caggatacccctttcagtgctgggctttaccctgaacatcagagggactttattgccaggggacctggggccc
tacctggccaatagcacccaccataatgtgaggttgcctgctgctggatgaccagaggctgctgctgcccc
ctgggcaaaggtggtgctgacagaccctgaagcagctaaatatgttcatggcattgctgtgcattgctacctg
gactttctggctcctgccaaggccaccctgggggagacacacaggctgtttccaataccatgctgtttgcct
ctgagtgtgtgtgggctccaagttttgggagcagctgtgtgaggctgggctcctgggatataggggatgcagta
cagccacagcatcatccaatctgctgtacctgtggtgggctggactgactggaatctggccctgaatcct
gaaggaggacctaactgggtcaggaattttgtggacagccccatcattgtggacatcaccaaggacaccttt
tacaagcagcccattgtttaccacctgggcccacttttagcaagttttattcctgagggctcccagagagtggggc
tggttgccagccagaagaatgacctggatgcagtgccactgatgcacctgatggctcagctgttgtgtgtgt
gctgaatagatccagcaaggatgtgcctctgacctcaaggatcctgctgtgggctttctggagacaatctca
cctggctactccattcacacctacctgtggagaaggcagtg

SEQ ID NO: 17

gccaggccttgcatcccaaagtctttcggctacagctccgtggtgtgctgtgcaacgccacctattgtgact
ccttcgatccccctacctttcccgcctgggcacattttctagatacagagtctacacgcagcggccggagaat
ggagctgagcatgggcccctatccaggccaatcacacaggaacaggcctgctgctgaccctgcagccagagc
agaagttccagaaggtgaagggctttggcggagccatgacagatgcagccgcctgaacatcctggccctgt
ccccacccgcccagaatctgctgctgaagtcctacttctctgaggaggcatcggctataacatcatccgggt
gccccatggccagctgcgacttttccatcagaacctacacatatgccgatacccctgacgattttcagctgca
caatttttccctgccagaggaggatacaaagctgaagatcccctgattcaccgggcccctgcagctggcaca
gcgggccctgagcctgctggccagcccctggacctcccctacatggctgaagaccaacggcgccgtgaatg
gcaagggctctctgaaggacagcctggcgacatctaccaccagacatgggcccagatatttctgaagtttc
tggatgcctacgccgagcacaagctgcagttctgggcccgtgacagcagagaatgagccttctgccggcctgc
tgagcggctatccctccagtgctgggctttacacctgagcaccagcgggactttatcgccagagatctggg
cccaaccctggccaactccacacaccacaatgtgaggctgctgatgctggacgatcagcgctgctgctgcc
tactgggccaaggtggtgctgaccgaccagaggccgccaagtacgtgcacggcatcgccgtgactgcta
tctggatttctggcacctgcaaaggccaccctgggagagacacaccggctgttccctaacaccatgctgttt
gccagcgagtgtgctggtgggctccaagttttgggagcagtcctgaggctgggatcttgggacagaggcatg
cagtactcccactctatcatccaatctgctgtatcacgtggtgggctggacagactggaacctggccctga
atccagagggcgggcccaactgggtgagaaatttctggatagccccatcatcgtggacatcaccaaggata

Figure 11 (cont)

21/57

cattctacaagcagccaatgttttatcacctgggccacttctctaagtttatccctgagggcagccagagggt
gggcctggtggccagccagaagaacgacctggatgccgtggccctgatgcacctgatggctccgccgtggt
ggtggtgctgaatcgctctagcaaggacgtgcctctgaccatcaaggatccagccgtgggatttctggagact
atttcacctggctattcaattcatatcctacctgtggaggaggcagtga

SEQ ID NO: 18

atggagttttcaagtccttccagagaggaatgtcccaagcctttgagtagggtaagcatcatggctggcagcc
tcacaggattgcttctacttcaggcagtgctgtgggcatcaggtgccaggccctgcatccctaagagccttgg
ctacagctctgtggtgtgtgtgcaatgccacactactgtgacagctttgacccccccaccttctgccctgg
gcaccttcagcagatatgagagcaccaggctctgggaggaggatggagctgagcatggggcccatccaggct
aatcacactggcactggcctgctgctgacctgcagcctgagcagaagttccagaaagtaaagggtttgga
ggggccatgactgatgctgctgctgaacatcctggccctgagccccctgcccagaatctgctgctgaag
agctacttctctgaggagggcattggctataacatcatcaggggtgcccatggccagctgtgacttcagcatca
ggacctacacctatgctgacaccctgatgattccagctgcacaacttcagcctgcctgaggaggatacca
agctgaagatcccactgatccacagggctctgcagctggcccagaggcctgtgagcctgctggccagcccct
ggaccagccccacttggctgaagaccaatggggctgtgaatgggaaggaggcctgaaggagacagcctgga
gacatctaccaccagacctggggccagatactttgtgaagttcctggatgcctatgctgagcacaagctgcagt
tctgggctgtgactgctgagaatgagccttctgctgggctgctgtctggctaccccttccaatgcctgggcttc
accctgagcatcagagggacttcattgccagggacctgggcccctaccctggccaacagcactcaccataat
gttaggctgctgatgctggatgaccagaggctgctgctgccccactgggctaagggtggtgctgactgacctg
aggctgctaaatatgtgcatggcattgctgtgattgctacctggacttctggctcctgccaaggccaccctg
ggggagaccacaggctgttccccaacaccatgctgtttgcctctgagtgtgtgtgggcagcaagttctggg
agcagtctgtgaggctgggcagctgggatagggggatgcagtacagccacagcatcatcaccaacctgctgt
accatgtggtgggctggactgactggaacctggccctgaacctgaggaggacctaactgggtcagaaact
ttgtggacagccccatcattgtggacatcaccaaggacacctttacaagcagcccatgttctaccacctggg
ccacttcagcaagttcatccctgaggggcagccagagagtggggctggtggccagccagaagaatgacctgg
atgctgtggctctgatgcacctgatggctctgctgtggtggtggtgctgaacaggagctctaaggatgtgcct
ctgacctcaaggatcctgctgtgggcttctggagaccatcagccctggctacagcatccacacctacctgt
ggaggaggcagtga

SEQ ID NO: 19

atggagttttcaagtccttccagagaggaatgtcccaagcctttgagtagggtaagcatcatggctggcagcc
tcacaggattgcttctacttcaggcagtgctgtgggcatcaggtgccaggccctgtatccctaagagccttgg
ctacagctcagtagtttgtgtctgtaatgccacatactgtgactcctttgacccccctaccttccctgccctgg
gaaccttcagcagatatgagtcaacaagatcaggaaggaggatggagctgtcaatgggacctatccaggct
aatcacacaggcacaggcctgctgctgacctgcagccagaacagaagttccagaaagtgaagggtttgg
aggagccatgacagatgctgctgctctcaacatcctggccctgtcaccctgcccagaatctgctgctgaa
gtcatacttctctgaagaagggaattggatataacatcatcaggggtgcccatggccagctgtgacttctccatc
aggacctacacctatgctgacaccctgatgattccagctgcacaacttcagcctcccagaggaagatacc
aagctcaagatccctctgatacatagggcactgcagctggcccagaggcctgtgtcactcctggccagcccc
tggacatcacccacttggctcaagaccaatggagctgtgaatggaaagggatcactcaaggagacagcctgg
agacatctaccaccagacctggggccagatactttgtgaagttcctggatgcctatgctgagcacaagctga

Figure 11 (cont)

22/57

gttctgggcagtgacagctgaaaatgagccttctgctggactgctgtcaggataccccttccagtgtctggc
ttcaccctgaacatcagagggacttcattgccagggacctgggacctacccttgccaactcaactcaccac
aatgtcaggctgctcatgctggatgaccagaggctgctgctgccccactgggccaaggtggtgctgacagac
ccagaagctgctaaatatgtgcatggcattgctgtgattgctacctggacttctggtccagccaaggcca
ccctgggagagacacacaggctgttcccaacacccatgctctttgcctctgagtgtgtgtgggctccaagtt
ctgggagcagtcagtgaggctgggctcctgggataggggaatgcagtacagccacagcatcatcacaacc
tcctgtaccatgtggtgggctggactgactggaacctggccctgaacctgaaggaggaccaactgggtca
gaaatgttggactcaccatcattgtggacatcaccaaggacacattctacaagcagcccatgttctacca
cctgggccacttcagcaagttcatccctgagggctccagaggggtgggactggtggcctcacagaagaatga
cctggatgcagtgccctgatgcatcctgatggctctgctgtggtggtgtgctgaatagatcctctaaggatg
tgctctgaccatcaaggatcctgctgtgggcttctggagacaatctcacctggctactccatccacaccta
cctgtggaggaggcagtg

SEQ ID NO: 20

atggagttttcaagtccttccagagaggaatgtccaagcctttgagtagggtaagcatcatggctggcagcc
tcacaggattgcttctacttcaggcagtgctgtgggcatcaggtgccaggccctgcatccctaagagctttgg
ctacagctctgtggtgtgtgtgtgcaatgccacatactgtgactcctttgacccccaccttctgcctgg
gcacattctccagatatgagagcacaagatctgggagaaggatggagctgagcatggggcccatccaggct
aatcacactggcacaggcctgctgctgaccctgcagcctgaacagaagtttcagaaagtgaagggtattgga
ggggccatgacagatgctgctgctgaatatcctggccctgtcacccctgcccagaatctgctgctgaaga
gctacttttcagaagaaggaattggatataatatcatcagagtgcccatggccagctgtgactttccatcag
aacctacacctatgcagacacccctgatgattttcagctgcacaattttagcctgcctgaggaagatacaa
gctgaagatacccctgattcacaggccctgcagctggccagaggcctgtttactgctggccagcccctg
gacatcacccacctggctgaagaccaatggagctgtgaatgggaagggtcactgaaggacagcctggag
acatctaccaccagacctgggcccagatactttgtgaagtttctggatgcctatgctgagcacaagctgcagtt
ttgggcagtgacagctgaaaatgagccttcagctgggctgctgtcaggatacccctttcagtgctgggcttt
accctgaacatcagagggactttattgccagggacctgggcccctaccctggccaatagcacccaccataat
gtgaggttgcctgatgctggatgaccagaggctgctgctgccccactgggcaaaggtggtgctgacagacct
gaagcagctaaatatgttcatggcattgctgtgattgctacctggactttctggctcctgccaaggccaccct
gggggagacacacaggctgttcccaataccatgctgtttgcctctgagtgtgtgtgggctccaagtttggg
agcagtctgtgaggctgggctcctgggatagaggatgcagtacagccacagcatcatccaatctgctgt
accatgtggtgggctggactgactggaatctggccctgaatcctgaaggaggacctaactgggtcaggaatt
ttgtggacagccccatcattgtggacatcaccaaggacacctttacaagcagcccatgtttaccacctggg
ccacttttagcaagtttattcctgagggctcccagagagtggggctggttgccagccagaagaatgacctggat
gcagtggcactgatgcatcctgatggctcagctgtgtggtggtgctgaatagatccagcaaggatgtgcctc
tgaccatcaaggatcctgctgtgggcttctggagacaatctcacctggctactccattcacacctacctgtg
gagaaggcagtg

SEQ ID NO: 21

atggagttttcaagtccttccagagaggaatgtccaagcctttgagtagggtaagcatcatggctggcagcc
tcacaggattgcttctacttcaggcagtgctgtgggcatcaggtgccaggccttgcatcccaaagtctttcgg

Figure 11 (cont)

23/57

ctacagctccgtggtgtgcgtgtgcaacgccacctattgtgactccttcgatccccctacctttcccgccctgg
gcacattttctagatacaggtctacacgcagcggccggagaatggagctgagcatggggccctatccaggcca
atcacacaggaacaggcctgctgctgaccctgcagccagagcagaagttccagaagggtgaagggtttggc
ggagccatgacagatgcagccgccctgaacatcctggccctgtccccacccgcccagaatctgctgtgaag
tcctacttctctgaggagggcatcggtataacatcatccgggtgcccatggccagctgcgacttttccatca
gaacctacacatatgccgatacccctgacgatttccagctgcacaattttccctgccagaggaggatacaa
agctgaagatccccctgattcaccgggccctgcagctggcacagcggcccgtgagcctgctggccagccccct
ggacctcccctacatggctgaagaccaacggcgccgtgaatggcaagggtctctgaaggggacagcctggc
gacatctaccaccagacatggggcagataatttctgaagtttctggatgcctacgccgagcacaagctgcag
ttctggggccgtgacagcagagaatgagccttctgccggcctgctgagcggctatcccttccagtgcctgggt
ttacacctgagcaccagcgggactttatcgccagagatctgggcccacccctggccaactccacacaccac
aatgtgagggtgctgatgctggacgatcagcgccctgctgctgcctcactgggccaagggtggtgctgaccgac
ccagaggccgccaagtacgtgcacggcatcgccgtgactgctatctggatttctggcacctgcaaaggcc
accctgggagagacacaccggctgttccctaacaccatgctgtttgccagcagtgctgcgtgggtccaag
ttttgggagcagtcctgtagggctgggatcttgggacagaggcatgcagtactcccactctatcatcaccaatc
tgctgtatcacgtggtgggctggacagactggaacctggccctgaatccagaggggcgccccaactgggtga
gaaatttctgtagcccatcatcgtaggacatcaccaaggatacattctacaagcagccaatgtttatca
cctggggcacttcttaagtttatccctgagggcagccagagggtgggcctgggtggccagccagaagaacga
cctggatgccgtggccctgatgcacctgatggctccgcctgggtgggtgctgaatcgctctagcaaggac
gtgcctctgacctcaaggatccagccgtgggatttctggagactatttcacctggctattcaattcataccta
cctgtggaggaggcagtg

SEQ ID NO: 22

gccaggccctgcatccctaagagctttggctacagctctgtggtgtgtgtgcaatgccacctactgtgaca
gctttgacccccacctttcctgccctgggcaccttcagcagatatgagagcaccagggtctgggaggaggga
tggagctgagcatggggcccatccaggctaatacactggcactggcctgctgctgaccctgcagcctgagc
agaagttccagaaagtaaagggtttggaggggcatgactgatgctgctgctgaacatcctggccctga
gccccctgccagaatctgctgctgaagagctacttctctgaggagggttggctataacatcatcagggt
gcccattggccagctgtgacttcagcatcaggacctacacctatgctgacaccctgatgatttccagctgcac
aacttcagcctgcctgaggaggataccaagctgaagatccactgatccacagggtctgagctggcccag
aggcctgtgagcctgctggccagcccctggaccagccccacttggctgaagaccaatggggctgtgaatggg
aaggggagcctgaagggacagcctggagacatctaccaccagacctgggcccagatactttgtgaagttcctg
gatgcctatgctgagcacaagctgcagttctgggtgtgactgctcagaatgagccttctgctgggtgctgt
ctggctaccccttcaatgcctgggcttaccctgagcatcagagggacttcattgccaggggacctggggcc
tacctggccaacagcactcaccataatgttaggctgctgatgctggatgaccagaggctgctgctgcccc
ctgggctaagggtggtgctgactgacctgaggctgctaaatatgtgcatggcattgctgtgattgctacctgg
actttctggctcctgccaaggccaccctgggggagaccacaggctgttccccaacaccatgctgtttgcctc
tgagtgtgtgtgggcagcaagttctgggagcagctgtgtagggctgggcagctgggatagggggatgcagta
cagccacagcatcatcaccaacctgctgtacctatgtggtgggctggactgactggaacctggccctgaacc
tgaggaggagcctaactgggtcagaaactttgtggacagccccatcattgtggacatcaccaaggacacct
ttacaagcagcccatgttctaccacctgggcccacttcagcaagttcatccctgagggcagccagagagtggg

Figure 11 (cont)

24/57

gctggtggccagccagaagaatgacctggatgctgtggctctgatgcatcctgatggctctgctgtggtggtg
gtgctgaacaggagctctaaggatgtgcctctgacctcaaggatcctgctgtgggcttcctggagaccatca
gccctggctacagcatccacacctacctgtggaggaggcagtga

SEQ ID NO: 23

gccaggccctgtatccctaagagctttggctacagctcagtagtttgtgtctgtaatgccacatactgtgactc
ctttgacccccctaccttcctgccctgggaaccttcagcagatatgagtcaacaagatcaggaaggaggat
ggagctgtcaatgggacccatccaggctaatacacacaggcacaggcctgctgctgacctgcagccagaac
agaagttccagaaagtgaagggatttggaggagccatgacagatgctgctgctctcaacatcctggccctgt
caccctgcccagaatctgctgctgaagtcatacttctctgaagaaggaattggatataacatcatcagggt
gcccattggccagctgtgacttctccatcaggacctacacctatgctgacaccctgatgatttccagctgcac
aacttcagcctcccagaggaagataccaagctcaagatccctctgatacatagggcactgcagctggccca
gaggcctgtgtcactcctggccagcccctggacatcacccacttggctcaagaccaatggagctgtgaatgg
aaagggatcactcaaggagacagcctggagacatctaccaccagacctgggcccagatactttgtgaagttcct
ggatgcctatgctgagcacaagctgcagttctgggcagtgcagctcagaatgagccttctgctggactgctg
tcaggatacccttccagtgtctgggcttcaccctgaacatcagagggacttcattgccagggacctgggac
ctacccttccaactcaactcaccacaatgtcaggctgctcatgctggatgaccagaggctgctgctgcccc
actgggccaaggtggtgctgacagaccagaagctgctaaatatgtgcatggcattgctgtgattgctacct
ggacttcttggtccagccaaggccaccctgggagagacacacaggctgttccccaacaccatgctctttgc
ctctgagtgtgtgtgggctccaagttctgggagcagtcagtgaggctgggctcctgggataggggaatgcag
tacagccacagcatcatcacaacctcctgtacctatgtgtgggctggactgactggaacctggccctgaac
cctgaaggaggacccaactgggtcagaaatttgggactcacccatcattgtggacatcaccaaggacaca
ttctacaagcagcccatgttctaccacctgggcccacttcagcaagttcatccctgagggctcccagagggtgg
gactggtggcctcacagaagaatgacctggatgcagtgccctgatgcatcctgatggctctgctgtgtggtggt
tgtgctgaatagatcctctaaggatgtgcctctgacctcaaggatcctgctgtgggcttcctggagacaatc
tcacctggctactccatccacacctacctgtggaggaggcagtga

SEQ ID NO: 24

gccaggccctgcatccctaagagctttggctacagctctgtggtgtgtgtgcaatgccacatactgtgact
cctttgacccccccacctttcctgccctgggcacattctccagatatgagagcacaagatctgggagaagga
tggagctgagcatggggcccatccaggctaatacactggcacaggcctgctgctgacctgcagcctgaac
agaagtttcagaaagtgaagggatttggaggggccatgacagatgctgctgctctgaatatcctggccctgtc
acccctgcccagaatctgctgctgaagagctactttcagaagaaggaattggatataatatcatcagagt
gcccattggccagctgtgacttttccatcagaacctacacctatgcagacaccctgatgattttcagctgcac
aattttagcctgcctgaggaagataccaagctgaagatacccctgattcacaggggccctgcagctggcccag
aggcctgtttcactgctggccagcccctggacatcacccacctggctgaagaccaatggagctgtgaatggg
aaggggtcactgaaggagacagcctggagacatctaccaccagacctgggcccagatactttgtgaagtttctg
gatgcctatgctgagcacaagctgcagtttgggcagtgcagctcagaatgagccttcagctgggctgctgt
caggataccctttcagtgctgggctttaccctgaacatcagagggactttattgccagggacctgggccc
tacctggccaatagcaccaccataatgtgaggttctgatgctggatgaccagaggctgctgctgccccca
ctgggcaaaggtggtgctgacagaccctgaagcagctaaatatgttcatggcattgctgtgattgctacctg

Figure 11 (cont)

25/57

gactttctggctcctgccaaggccaccctgggggagacacacaggctgtttccaataccatgctgtttgcct
ctgagtgtgtgtgggctccaagttttgggagcagtctgtgaggctgggctcctgggatagagggatgcagta
cagccacagcatcatcaccaatctgtgtaccatgtggtgggctggactgactggaatctggccctgaatcct
gaaggaggacctaactgggtcaggaattttgtggacagccccatcattgtggacatcaccaaggacacctt
tacaagcagccccatgttttaccacctgggcccacttttagcaagttttattcctgagggctcccagagagtggggc
tggttgccagccagaagaatgacctggatgcagtggcactgatgcacctgatggctcagctgttgtggtggt
gctgaatagatccagcaaggatgtgcctctgacctcaaggatcctgctgtgggctttctggagacaatctca
cctggctactccattcacacctacctgtggagaaggcagtgga

SEQ ID NO: 25

gccaggccttgcatcccaaagtctttcggtacagctccgtggtgtgcgtgtgcaacgccacctattgtgact
ccttcgatccccctacctttcccgccctgggcacattttctagatacagagtctacacgcagcgccggagaat
ggagctgagcatgggcccctatccaggccaatcacacaggaacaggcctgtgctgacctgcagccagagc
agaagttccagaagggtgaagggtttggcgagccatgacagatgcagccgccctgaacatcctggccctgt
ccccacccgccagaatctgtgctgaagtcctacttctctgaggaggcatcggtataacatcatccgggt
gccccatggccagctgcgacttttccatcagaacctacacatatgccgataccccctgacgatttccagctgca
caatttttccctgccagaggaggatacaaagctgaagatccccctgattcaccgggcccctgcagctggcaca
gcgggccctgagcctgtggccagccccctggacctcccctacatggctgaagaccaacggcgccgtgaatg
gcaagggtctctgaagggacagcctggcgacatctaccaccagacatgggccagatatttctgtaagttt
tggtgacctacgccgagcacaagctgcagttctgggcccgtgacagcacagaatgagccttctgccggcctgc
tgagcggctatcccttccagtgacctgggctttacacctgagcaccagcgggactttatcgccagagatctggg
cccaacctggccaactccacacaccacaatgtgaggctgctgatgctggacgatcagcgctgctgctgcc
tactgggccaagggtggtgctgaccgacctagaggccgccaagtacgtgcacggcatcgccgtgactgcta
tctggatttctggcacctgcaaaggccaccctgggagagacacaccggctgttccctaaccatgctgttt
gccagcgagtgtgcgtgggctccaagttttgggagcagtcctgtaggctgggatcttgggacagaggcatg
cagtactcccactctatcatcaccaatctgctgtatcacgtggtgggctggacagactggaacctggccctga
atccagagggcgggcccaactgggtgagaaatttctggtgtagccccatcatcgtggacatcaccaaggata
cattctacaagcagccaatgttttatcactgggcccacttctctaagtttatccctgagggcagccagagggt
gggcctggtggccagccagaagaacgacctggatgccgtggccctgatgcacctgatggctccgccgtggt
ggtggtgctgaatcgctctagcaaggacgtgcctctgacctcaaggatccagccgtgggatttctggagact
atttcacctggctattcaattcatacctacctgtggaggaggcagtgga

SEQ ID NO: 26

atggagttttcaagtccttccagagaggaatgtcccaagcctttgagtagggtaagcatcatggctggcagcc
tcacaggattgcttctacttcaggcagtgctgtgggcatcaggtgccaggccctgcacccctaagagctttgg
ctacagctctgtggtgtgtgtgcaatgccacctactgtgacagctttgacccccccacctttcctgccctgg
gcaccttcagcagatatgagagcaccaggtctgggaggaggatggagctgagcatggggcccatccaggct
aatcacactggcactggcctgctgctgacctgcagcctgagcagaagttccagaaagtaaagggttttggga
ggggccatgactgatgctgctgctgaacatcctggccctgagccccctgcccagaatctgctgctgaag
agctacttctctgaggagggttggctataacatcatcagggtgcccagctgtgacttcagcatca
ggacctacacctatgctgacaccctgatgatttcagctgcacaacttcagcctgcctgaggaggatacca

Figure 11 (cont)

26/57

agctgaagatcccactgatccacagggctctgcagctggcccagaggcctgtgagcctgctggccagcccct
ggaccagccccacttggctgaagaccaatggggctgtgaatgggaaggggagcctgaaggacagcctgga
gacatctaccaccagacctggggcagatactttgtgaagttcctggatgcctatgctgagcacaagctgcagt
tctgggctgtgactgctcagaatgagccttctgctgggctgctgtctggctaccccttccaatgcctgggcttc
accctgagcatcagagggacttcattgccagggacctgggcccctaccctggccaacagcactcaccataat
gttaggctgctgatgctggatgaccagaggctgctgctgccccactgggctaagggtgggtgctgactgaccctg
aggctgctaaatatgtgcatggcattgctgtgcattgctacctggactttctggctcctgccaaggccaccctg
ggggagaccacaggctgttccccaacacatgctgtttgcctctgagtgtgtgtgggcagcaagttctggg
agcagtctgtgaggctgggcagctgggatagggggatgcagtacagccacagcatcatcaccaacctgctgt
accatgtgggtgggctggactgactggaacctggccctgaacctgagggaggacctaactgggtcagaaact
ttgtggacagccccatcattgtggacatcaccaaggacaccttttacaagcagcccatgttctaccacctggg
ccacttcagcaagttcatccctgagggcagccagagagtggggctgggtggccagccagaagaatgacctgg
atgctgtggctctgatgcatcctgatggctctgctgtggtggtggtgctgaacaggagctctaaggatgtgcct
ctgacctcaaggatcctgctgtgggcttctggagacctcagccctggctacagcatccacacctacctgt
ggaggaggcagtga

SEQ ID NO: 27

atggagttttcaagtccttccagagaggaatgtcccaagcctttgagtagggtaagcatcatggctggcagcc
tcacaggattgcttctacttcaggcagtgctgtgggcatcaggtgccaggccctgtatccctaagagctttgg
ctacagctcagtagtttgtgtctgtaatgccacatactgtgactcctttgacccccctaccttccctgccctgg
gaaccttcagcagatatgagtcaacaagatcaggaaggaggatggagctgtcaatgggacctatccaggct
aatcacacaggcacaggcctgctgctgacctgcagccagaacagaagttccagaaagtgaagggtttgg
aggagccatgacagatgctgctgcttcaacatcctggccctgtcacccctgcccagaatctgctgctgaa
gtcatacttctctgaagaaggattggatataacatcatcagggtgcccattggccagctgtgacttctccatc
aggacctacacctatgctgacaccttgatgatttcagctgcacaacttcagcctcccagaggaagatacc
aagctcaagatccctctgatacatagggcactgcagctggcccagaggcctgtgtcactcctggccagcccc
tggacatcacccacttggctcaagaccaatggagctgtgaatggaaagggtatcactcaaggacagcctgg
agacatctaccaccagacctgggcccagatactttgtgaagttcctggatgcctatgctgagcacaagctgca
gttctgggcagtgacagctcagaatgagccttctgctggactgctgtcaggatacccccttcagtgtctgggc
ttcacccctgaacatcagagggaacttcattgccagggacctgggacctacccttgccaactcaactcaccac
aatgtcaggctgctcatgctggatgaccagaggctgctgctgccccactgggccaagggtggtgctgacagac
ccagaagctgctaaatatgtgcatggcattgctgtgcattgctacctggacttctggctccagccaaggcca
ccctgggagagacacacaggctgttccccaacacatgctctttgcctctgagtgtgtgtgggctccaagtt
ctgggagcagtcagtgaggctgggctcctgggataggggaatgcagtacagccacagcatcatcacaacc
tcctgtaccatgtggtgggctggactgactggaacctggccctgaacctgaaggaggaccaactgggtca
gaaattttgtggactcacccatcattgtggacatcaccaaggacacattctacaagcagcccatgttctacca
cctgggcccacttcagcaagttcatccctgagggctcccagagggtgggactgggtggcctcacagaagaatga
cctggatgcagtggccctgatgcatcctgatggctctgctgtggtggtgtgtgctgaatagatcctctaaggatg
tgctctgacctcaaggatcctgctgtgggcttctggagacaatctcacctggctactccatccacacct
cctgtggaggaggcagtga

Figure 11 (cont)

27/57

SEQ ID NO: 28

atggagttttcaagtccttccagagaggaatgtcccaagcctttgagtagggtaagcatcatggctggcagcc
tcacaggattgcttctacttcaggcagtgctgtgggcatcaggtgccaggccttgcacccctaagagccttgg
ctacagctctgtggtgtgtgtgtgcaatgccacatactgtgactcctttgacccccaccttccctgcctgg
gcacattctccagatatgagagcacaagatctgggagaaggatggagctgagcatggggcccatccaggct
aatcacactggcacaggcctgctgctgaccctgcagcctgaacagaagtttcagaaagtgaagggatttggg
ggggccatgacagatgctgctgctgaatatcctggccctgtcacccctgccagaatctgctgctgaaga
gctacttttcagaagaaggaattggatataatatcatcagagtgcccatggccagctgtgacttttccatcag
aacctacacctatgcagacacccctgatgattttcagctgcacaattttagcctgcctgaggaagatacaa
gctgaagatacccctgattcacagggccctgcagctggccagaggcctgtttactgctggccagcccctg
gacatcacccacctggctgaagaccaatggagctgtgaatgggaaggggtcactgaaggagacagcctggag
acatctaccaccagacctgggcccagatactttgtgaagtttctggatgcctatgctgagcacaagctgcagtt
ttgggcagtgacagctcagaatgagccttcagctgggctgctgtcaggatacccctttcagtgctgggcttt
accctgaacatcagaggggactttattgccagggacctgggcccctaccctggccaatagcacccaccataat
gtgaggttgctgatgctggatgaccagaggctgctgctgccccactgggcaaaggtggtgctgacagaccct
gaagcagctaaatatgttcatggcattgctgtgcattgctacctggactttctggctcctgccaaggccaccct
gggggagacacacaggctgtttcccaataccatgctgtttgctctgagtgctgtgtgggctccaagtttggg
agcagctctgtgaggctgggctcctgggatataggggatgcagtacagccacagcatcatccaatctgctgt
accatgtggtgggctggactgactggaatctggccctgaatcctgaaggaggacctaactgggtcaggaatt
ttgtggacagccccatcattgtggacatcaccaaggacaccttttacaagcagcccatgttttaccacctggg
ccacttttagcaagtttattcctgagggctcccagagagtggggctgggtgccagccagaagaatgacctggat
gcagtggcactgatgcacctgatggctcagctgttgtggtggtgctgaatagatccagcaaggatgtgcctc
tgaccatcaaggatcctgctgtgggctttctggagacaatctcacctggctactccattcacacctacctgtg
gagaaggcagtga

SEQ ID NO: 29

atggagttttcaagtccttccagagaggaatgtcccaagcctttgagtagggtaagcatcatggctggcagcc
tcacaggattgcttctacttcaggcagtgctgtgggcatcaggtgccaggccttgcacccaaagtctttcgg
ctacagctccgtggtgtgctgtgcaacgccacatttgtgactccttcgatccccctacctttcccgccctgg
gcacattttctagatacgagtctacacgcagcggccggagaatggagctgagcatggggccctatccaggcca
atcacacaggaacaggcctgctgctgaccctgcagccagagcagaagtccagaaggatgaagggctttggc
ggagccatgacagatgcagccgccctgaacatcctggccctgtccccacccgccagaatctgctgctgaag
tcctacttctctgaggagggcatcggtataacatcatccgggtgcccatggccagctgcgacttttccatca
gaacctacacatatgccgatacccctgacgatttccagctgcacaatttttccctgccagaggaggatacaa
agctgaagatccccctgattcacggggccctgcagctggcacagcggcccgtgagcctgctggccagcccct
ggacctcccctacatggctgaagaccaacggcgccgtgaatggcaagggctcttgaagggacagcctggc
gacatctaccaccagacatggggccagataatttctgaagtttctggatgcctacgccgagcacaagctgcag
ttctgggcccgtgacagcacagaatgagccttctgccggcctgctgagcggctatcccttccagtgctgggct
ttacacctgagcaccagcgggactttatcgccagagatctgggcccacccctggccaactccacacaccac
aatgtgaggctgctgatgctggacgatcagcgccctgctgctgcctcactgggccaaggtggtgctgaccgac

Figure 11 (cont)

28/57

ccagaggccgccaagtacgtgcacggcatcgccgtgactgctatctggatttcctggcacctgcaaaggcc
accctgggagagacacaccggctgttcctaacaccatgctgttggcagcgagtgcgtgggctccaag
tttgggagcagtcctgaggctgggatcttgggacagaggcatgcagtactcccactctatcatcaccaatc
tgctgtatcacgtgggtgggctggacagactggaacctggccctgaatccagagggcgccccaactgggtga
gaaatttcgtgtagcccatcatcgtggacatcaccaaggataattctacaagcagccaatgtttatca
cctggggcacttctctaagtttatccctgagggcagccagaggggtgggcctgggtggccagccagaagaacga
cctggatgccgtggccctgatgcacctgatggctccgcgtgggtgggtgctgaatcgtctagcaaggac
gtgcctctgacctcaaggatccagccgtgggatttctggagactatttcacctggctattcaattcataccta
cctgtggaggaggcagtga

SEQ ID NO: 30

gggcgactcagatcccagccagtggaacttagccccctgttctcctccgataactggggtagccttggttaat
attcaccagcagcctccccgttggccctctggatccactgcttaatacggacgaggacagggccctgtct
cctcagcttcaggcaccaccactgacctgggacagtgaat

SEQ ID NO: 31

ggatcttctaccagtggaaacagccactaaggattctgcagtgcagagcagagggccagctaagtgggtactct
cccagagactgtctgactcacgccacccctccaccttggacacaggacgctgtggttctgagccaggtac
aatgactccttccgtaagtgcagtggaaactgtacactgcccaggcaaagcgtccgggcagcgtaggcggg
cgactcagatcccagccagtggaacttagccccctgttctcctccgataactggggtagccttggttaattatc
accagcagcctccccgttggccctctggatccactgcttaatacggacgaggacagggccctgtctcctc
agcttcaggcaccaccactgacctgggacagtgaatgatccccctgatctgcggcc

SEQ ID NO: 32

ccctaaaatgggcaaacattgcaagcagcaaacagcaaacacacagccctccctgcctgctgaccttgagg
ctggggcagaggtcagacacctctctggggccatgccacctccaac

SEQ ID NO: 33

aggctcagaggcacacaggagtttctgggctcacctgccccctccaacccctcagttcccatcctccagc
agctgttctgtgctgcctctgaagtccacactgaacaaacttcagcctactcatgtccctaaaatgggcaa
cattgcaagcagcaaacagcaaacacacagccctccctgcctgctgaccttgagctggggcagaggtcag
agacctctctggggccatgccacctccaacatccactcagcccttgaatttcgggtggagaggagcagagg
ttgtcctggcgtgggttaggtagtgtgagagg

SEQ ID NO: 34

ccctaaaatgggcaaacattgcaagcagcaaacagcaaacacacagccctccctgcctgctgaccttgagg
ctggggcagaggtcagacacctctctggggccatgccacctccaactggacacaggacgctgtgggttctga
gccagggggcgactcagatcccagccagtggaacttagccccctgttctcctccgataactggggtagccttg
gttaatttcaccagcagcctccccgttggccctctggatccactgcttaatacggacgaggacagggcc
ctgtctcctcagcttcaggcaccaccactgacctgggacagtgaat

Figure 11 (cont)

29/57

SEQ ID NO: 35

aggctcagaggcacacaggagtttctgggctcaccctgccccctccaacccctcagttcccatcctccagc
agctgtttgtgtgctgcctctgaagtccacactgaacaaacttcagcctactcatgtccctaaaatgggcaa
cattgcaagcagcaaacagcaaacacacagccctccctgcctgctgaccttgagctggggcagaggtcag
agacctctctgggcccattgccacctccaacatccactcgacccttggaatttcggtggagaggagcagagg
ttgtcctggcgtgggttaggtagtgtgagaggggtacccggggatcttgctaccagtgggaacagccactaagg
attctgcagtgaagcagagggccagctaagtgggtactctcccagagactgtctgactcacgccacccctc
caccttggacacaggacgctgtggtttctgagccaggtacaatgactcctttcggttaagtgcagtgggaagctg
tacactgccaggcaaagcgtccgggcagcgtaggcgggcgactcagatcccagccagtggacttagcccc
tgtttgcctctccgataactgggggtgaccttggttaattaccagcagcctcccccttgccctctggatc
cactgcttaatacggacgaggacagggccctgtctcctcagcttcaggcaccaccactgacctgggacagt
gaatgatccccctgatctgcggcc

SEQ ID NO: 36

MAADGYLPDWLEDNLSEGIREWWALKPGVPQPKANQQHQDNRRGLVLPGYKYLGPNG
LDKGEPVNEADAAALEHDKAYDQQLKAGDNPYLKYNHADADEFQERLQEDTSFGGNLGRA
VFQAKKRILEPLGLVEEAAKTAPGKKRPVDQSPQEPDSSSGVGKSGKQPARKRLNFGQTGD
SESVPDPQPLGEPPAAPTSLGSNTMASGGGAPMADNNEGADGVGNSSGNWHCDSQWL
DRVITTSTRTWALPTYNNHLYKQISSQSGASNDNHYFGYSTPWGYFDFNRHFCHFSRWD
QRLINNNWGFPRPKLSFKLFNIQVKEVTQNDGTTTIANNLTSTVQVFTDSEYQLPYVLGSA
HQGCLPPFPADVFMVPQYGYLTLNNGSQAVGRSSFYCLEYFPSQMLRTGNNFQFSYTFED
VPFHSSYAHSQSLDRLMNPLIDQYLYLNRTQGTTSGTTNQSRLIFSQAGPQSMQLQARN
WLPGPCYRQRLSKTANDNNNSNFPWTAASKYHLNGRDSLVPNPGPAMASHKDDEEKFFP
MHGNLIFGKEGTTASNAELDNVMITDEEEIRTTNPVATEQYGTVANNLQSSNTAPTTRTVN
DQGALPGMVWQDRDVYLQGPIWAKIPHTDGHFHPSPLMGGFGLKHPPPQIMIKNTPVPA
NPPTTFSPAKFASFITQYSTGQVSVEIEWELQKENSKRWNPEIQYTSNYSNVNVDFTVDTN
GVYSEPRPIGTRYLTRNL

SEQ ID NO: 37

MAADGYLPDWLEDNLSEGIREWWALKPGAPKPKANQQKQDDGRGLVLPGYKYLGPFG
LDKGEPVNAADAAALEHDKAYDQQLQAGDNPYLRYNHADADEFQERLQEDTSFGGNLGRA
VFQAKKRVLEPLGLVEEGAKTAPGKKRPVDQSPQEPDSSSGVGKSGKQPARKRLNFGQTG
DSESVPDPQPLGEPPAAPTSLGSNTMASGGGAPMADNNEGADGVGNSSGNWHCDSQWL
GDRVITTSTRTWALPTYNNHLYKQISSQSGASNDNHYFGYSTPWGYFDFNRHFCHFSRWD
WQRLINNNWGFPRPKLSFKLFNIQVKEVTQNDGTTTIANNLTSTVQVFTDSEYQLPYVLGS
AHQGCLPPFPADVFMVPQYGYLTLNNGSQAVGRSSFYCLEYFPSQMLRTGNNFQFSYTFE
DVPFHSSYAHSQSLDRLMNPLIDQYLYLNRTQGTTSGTTNQSRLIFSQAGPQSMQLQARN
WLPGPCYRQRLSKTANDNNNSNFPWTAASKYHLNGRDSLVPNPGPAMASHKDDEEKFFP
MHGNLIFGKEGTTASNAELDNVMITDEEEIRTTNPVATEQYGTVANNLQSSNTAPTTRTVN
DQGALPGMVWQDRDVYLQGPIWAKIPHTDGHFHPSPLMGGFGLKHPPPQIMIKNTPVPA

Figure 11 (cont)

30/57

NPPTTFSPAKFASFITQYSTGQVSVEIEWELQKENS KRWNPEIQYTSN YNKS VNVDFTVDTN
GVYSEPRPIGTRYLTRNL

SEQ ID NO: 38

MAADGYLPDWLEDNLSEGIREWWALQPGAPKPKANQQHQDNARGLVLPGYKYLGPNG
LDKGEPVNAADAAALEHDKAYDQQLKAGDNPYLKYNHADA EFQERLKEDTSFGGNLGRA
VFQAKKRILLEPLGLVEEAAKTAPGKKRPVDQSPQEPDSSSGVGKSGKQPARKRLNFGQTG
DSEVPDPQPLGEPPAAPTSLGSNTMASGGGAPMADNNEGADGVGNSSGNWHCDSQWL
GDRVITTSTRTWALPTYNNHLYKQISSQSGASNDNHYFGYSTPWGYFDFNRFHCHFSPRD
WQRLINNNWGFRPKKLSFKLFNIQVKEVTQNDGTTTIANNLTSTVQVFTDSEYQLPYVLGS
AHQGCLPPFPADVFMVPQYGYLTLNNGSQAVGRSSFYCLEYFPSQMLRTGNNFQFSYTFE
DVPFHSSYAHSQSLDRLMNPLIDQYLYLNRTQGTTS GTTNQSRLLFSQAGPQMSLQARN
WLPGPCYRQQRSLKTANDNNNSNFPWTAASKYHLNGRDSLVPNGPAMASHKDDEEKFFP
MHGNLIFGKEGTTASNAELDNVMITDEEEIRTTNPVATEQYGTVANNLQSSNTAPTTRTVN
DQ GALPGMVWQDRDVYLQGPIWAKIPHTDGHFHPSPLMGGFGLKHPPPQIMIKNTPVPA
NPPTTFSPAKFASFITQYSTGQVSVEIEWELQKENS KRWNPEIQYTSN YNKS VNVDFTVDTN
GVYSEPRPIGTRYLTRPL

SEQ ID NO: 39

MAADGYLPDWLEDNLSEGIREWWALKPGAPQPKANQQHQDNARGLVLPGYKYLGPNG
LDKGEPVNAADAAALEHDKAYDQQLKAGDNPYLKYNHADA EFQERLKEDTSFGGNLGRA
VFQAKKRILLEPLGLVEEAAKTAPGKKRPVEQSPQEPDSSAGIGKSGAQPAKKRLNFGQTGD
TESVPDPQPIGEPPAAPSGVGS LT MASGGGAPVADNNEGADGVGSSSGNWHCDSQWLGD
RVITTSTRTWALPTYNNHLYKQISNSTSGGSSNDNAYFGYSTPWGYFDFNRFHCHFSPRD
WQRLINNNWGFRPKRLNFKLFNIQVKEVTDNNGVKTIANNLTSTVQVFTDS DYQLPYVLG
SAHEGCLPPFPADVFMIPQYGYLTLNDGSQAVGRSSFYCLEYFPSQMLRTGNNFQFSYEF
NVPFHSSYAHSQSLDRLMNPLIDQYLYLSKTINGSGQNQQTLKFSVAGPSNMAVQGRNYIP
GPSYRQQRVSTTVTQNNNSEFAWPGASSWALNGRNSLMNPGPAMASHKEGEDRFFPLSG
SLIFGKQGTGRDNVDADKVMITNEEEIKTTNPVATESYQQVATNHQSAQAQAQTGWVQN
QGILPGMVWQDRDVYLQGPIWAKIPHTDGNFHPSPLMGGFGMKHPPPQILIKNTPVPADP
PTAFNKDKLNSFITQYSTGQVSVEIEWELQKENS KRWNPEIQYTSN YNKS NNVEFAVNTEG
VYSEPRPIGTRYLTRNL

SEQ ID NO: 40

atggagttttcaagtccttccagagaggaatgtcccaagcctttgagtagggtaagcatcatggctggcagcc
tcacaggattgcttctacttcaggcagtgctgtgggcatcaggtgcccggcctgcatccctaaaagcttcgg
ctacagctcgggtgtgtgtctgcaatgccacatactgtgactcctttgacccccgaccttctcctgcccttg
gtaccttcagccgctatgaggtacacgcagtgggcgacggatggagctgagtatggggcccatccaggcta
atcacacgggacagggcctgctactgaccctgcagccagaacagaagttccagaaagtgaagggatttggga
ggggccatgacagatgctgctgctctcaacatccttgccctgtcaccctgccccaaatttgctacttaaat
cgtacttctctgaagaaggaatcggatataacatcatccgggtacccatggccagctgtgacttctccatccg

Figure 11 (cont)

31/57

cacctacacctatgcagacacccctgatgatttcagttgcacaacttcagcctcccagaggaagataccaa
gctcaagatacccctgattcaccgagccctgcagttggcccagcgtcccgtttcactccttgccagcccctgg
acatcacccacttggctcaagaccaatggagcggatgaatgggaaggggtcactcaagggacagcccggaga
catctaccaccagacctgggccagatactttgtgaagttcctggatgcctatgctgagcacaagttacagttc
tgggcagtgcagctgaaaatgagccttctgctgggctgttgagtggtatgataccccttcagtgctgggcttca
cccctgaacatcagcgagacttcattgcccgtgacctaggtcctaccctcgccaacagtactcaccacaatg
tccgcctactcatgctggatgaccaacgcttgctgctgccccactggggcaaaggtgggtactgacagaccag
aagcagctaaatatgttcatggcattgctgtacattggtacctggactttctggctccagccaaagccaccct
aggggagacacaccgcctgttccccaacaccatgctctttgcctcagaggcctgtgtgggctccaagttctgg
gagcagagtgtgcggttaggctcctgggatcgaggatgcagtacagccacagcatcatcacgaacctcctg
taccatgtggtcggtggaccgactggaaccttgcctgaaccccgaaggaggaccaattgggtgcgtaac
ttgtcgacagtcccatcattgtagacatcaccaaggacacgttttacaacagcccattgttctaccacctg
gccacttcagcaagttcattcctgagggtcccagagagtggggctggttgccagtcagaagaacgacctgg
acgcagtggcactgatgcacccgatggctctgctgttggtcgtgctaaaccgctcctctaaggatgtgcct
cttaccatcaaggatcctgctgtgggcttctgagacaatctcacctggctactccattcacacctacctgt
ggcgtcgccagtga

SEQ ID NO: 41

MEFSSPSREECPKPLSRVSIMAGSLTGLLLLQAVSWASGARPCIPKSFGYSSVVCVCNATYCD
SFDPPPTFPALGTFSRYESTRSGRRMELSMGPIQANHTGTGLLLLLQPEQKFQKVKGF GGA
MTDAAALNILALSPPAQNLLLLKSYFSEEGIGYNIIRVPMASCDIFSIRTYTYADTPDDFQLHNFS
LPEEDTKLKIPLIHRALQLAQRPVSLASPWTSPWLKTNGAVNGKGS LKGQPGDIYHQT
WARYFVKFLDAYAEHKLQFWAVTAQNEPSAGLLSGYPFQCLGFTPEHQRDFIARDLGPTLA
NSTHHNVRLMLDDQRLLLPHWAKVVLTDPEAAKYVHGI AVHWYLDFLAPAKATLGETHR
LFPNTMLFASEACVGSKFWEQSVRLGSDRGMQYSHSIITNLLYHVVGWTDWNLALNPE
GGPNWVRNFVDSPIIVDITKDTFYKQPMFYHLGHFSKFIPEG SQRVGLVASQKNDLDAVAL
MHPDGS AVVVVLNRSSKDVPLTIKDP AVGFLETISP GYSIHTYLWRRQ

SEQ ID NO: 42

MEFSSPSREECPKPLSRVSIMAGSLTGLLLLQAVSWASGARPCIPKSFGYSSVVCVCNATYCD
SFDPPPTFPALGTFSRYESTRSGRRMELSMGPIQANHTGTGLLLLLQPEQKFQKVKGF GGA
MTDAAALNILALSPPAQNLLLLKSYFSEEGIGYNIIRVPMASCDIFSIRTYTYADTPDDFQLHNFS
LPEEDTKLKIPLIHRALQLAQRPVSLASPWTSPWLKTNGAVNGKGS LKGQPGDIYHQT
WARYFVKFLDAYAEHKLQFWAVTAENEPSAGLLSGYPFQCLGFTPEHQRDFIARDLGPTLA
NSTHHNVRLMLDDQRLLLPHWAKVVLTDPEAAKYVHGI AVHCYLDLAPAKATLGETHRL
FPNTMLFASECCVGSKFWEQSVRLGSDRGMQYSHSIITNLLYHVVGWTDWNLALNPEG
GPNWVRNFVDSPIIVDITKDTFYKQPMFYHLGHFSKFIPEG SQRVGLVASQKNDLDAVALMH
PDGS AVVVVLNRSSKDVPLTIKDP AVGFLETISP GYSIHTYLWRRQ

SEQ ID NO: 43

MEFSSPSREECPKPLSRVSIMAGSLTGLLLLQAVSWASGARPCIPKSFGYSSVVCVCNATYCD
SFDPPPTFPALGTFSRYESTRSGRRMELSMGPIQANHTGTGLLLLLQPEQKFQKVKGF GGA

Figure 11 (cont)

32/57

MTDAAALNILALSPPAQNLLLLKSYFSEEGIGYNIIRVPMASCDFSIRTYTYADTPDDFQLHNFS
LPEEDTKLKIPLIHRALQLAQRPVSLASPWTSPWLKTNGAVNGKGS�KGQPGDIYHQT
WARYFVKFLDAYAEHKLQFWAVTAQNEPSAGLLSGYPFQCLGFTPEHQRFIARDLGPTLA
NSTHHNVRLMLDDQRLLLPHWAKVVLTDPAAKYVHGIAVHCYLDLFLAPAKATLGETHRL
FPNTMLFASECCVGSKFWEQSVRLGSWDRGMQYSHSIITNLLYHVVGWTDWNLALNPEG
GPNWVRNFVDSPIIVDITKDTFYKQPMFYHLGHFSKFIPEGQSRVGLVASQKNDLDAVALMH
PDGSAVVVVLNRSSKDVPLTIKDPAVGFLETISPGYSIHTYLWRRQ

SEQ ID NO: 44

ARPCIPKSFGYSSVVCNATYCDSFDPPTFPALGTFSRYESTRSGRRMELSMGPIQANHTG
TGLLLTLQPEQKFQKVKGGAMTDAAALNILALSPPAQNLLLLKSYFSEEGIGYNIIRVPM
SCDFSIRTYTYADTPDDFQLHNFSLPEEDTKLKIPLIHRALQLAQRPVSLASPWTSPWLK
TNGAVNGKGS�KGQPGDIYHQTWARYFVKFLDAYAEHKLQFWAVTAQNEPSAGLLSGYPF
QCLGFTPEHQRFIARDLGPTLANSTHHNVRLMLDDQRLLLPHWAKVVLTDPAAKYVH
GIAVHWYLDLFLAPAKATLGETHRLFPNTMLFASEACVGSKFWEQSVRLGSWDRGMQYSHS
IITNLLYHVVGWTDWNLALNPEGGPNWVRNFVDSPIIVDITKDTFYKQPMFYHLGHFSKFI
PEGQSRVGLVASQKNDLDAVALMHPDGSAVVVVLNRSSKDVPLTIKDPAVGFLETISPGYSI
HTYLWRRQ

SEQ ID NO: 45

ARPCIPKSFGYSSVVCNATYCDSFDPPTFPALGTFSRYESTRSGRRMELSMGPIQANHTG
TGLLLTLQPEQKFQKVKGGAMTDAAALNILALSPPAQNLLLLKSYFSEEGIGYNIIRVPM
SCDFSIRTYTYADTPDDFQLHNFSLPEEDTKLKIPLIHRALQLAQRPVSLASPWTSPWLK
TNGAVNGKGS�KGQPGDIYHQTWARYFVKFLDAYAEHKLQFWAVTAENEPSAGLLSGYPF
QCLGFTPEHQRFIARDLGPTLANSTHHNVRLMLDDQRLLLPHWAKVVLTDPAAKYVH
GIAVHCYLDLFLAPAKATLGETHRLFPNTMLFASECCVGSKFWEQSVRLGSWDRGMQYSHS
ITNLLYHVVGWTDWNLALNPEGGPNWVRNFVDSPIIVDITKDTFYKQPMFYHLGHFSKFI
EGQSRVGLVASQKNDLDAVALMHPDGSAVVVVLNRSSKDVPLTIKDPAVGFLETISPGYSI
HTYLWRRQ

SEQ ID NO: 46

ARPCIPKSFGYSSVVCNATYCDSFDPPTFPALGTFSRYESTRSGRRMELSMGPIQANHTG
TGLLLTLQPEQKFQKVKGGAMTDAAALNILALSPPAQNLLLLKSYFSEEGIGYNIIRVPM
SCDFSIRTYTYADTPDDFQLHNFSLPEEDTKLKIPLIHRALQLAQRPVSLASPWTSPWLK
TNGAVNGKGS�KGQPGDIYHQTWARYFVKFLDAYAEHKLQFWAVTAQNEPSAGLLSGYPF
QCLGFTPEHQRFIARDLGPTLANSTHHNVRLMLDDQRLLLPHWAKVVLTDPAAKYVH
GIAVHCYLDLFLAPAKATLGETHRLFPNTMLFASECCVGSKFWEQSVRLGSWDRGMQYSHS
ITNLLYHVVGWTDWNLALNPEGGPNWVRNFVDSPIIVDITKDTFYKQPMFYHLGHFSKFI
EGQSRVGLVASQKNDLDAVALMHPDGSAVVVVLNRSSKDVPLTIKDPAVGFLETISPGYSI
HTYLWRRQ

Figure 11 (cont)

33/57

SEQ ID NO: 47

atggagttttcaagtccttccagagaggaatgtcccaagcctttgagtagggtaagcatcatggctggcagcc
tcacaggattgcttctacttcaggcagtgctgtgggcatcaggtgccaggccctgcatccctaagagctttgg
ctacagctctgtggtgtgtgtgtgcaatgccacctactgtgacagctttgacccccccacctttcctgccctgg
gcaccttcagcagatatgagagcaccaggtctgggaggaggatggagctgagcatggggcccatccaggct
aatcacactggcactggcctgctgctgaccctgcagcctgagcagaagttccagaaagtaaagggttttggg
ggggccatgactgatgctgctgctgaacatcctggccctgagccccctgcccagaatctgctgctgaag
agctacttctctgaggagggttggctataacatcatcagggtgcccatggccagctgtgacttcagcatca
ggacctacacctatgctgacaccctgatgattccagctgcacaacttcagcctgcctgaggaggatacca
agctgaagatcccactgatccacagggtctgcagctggcccagaggcctgtgagcctgctggccagcccct
ggaccagccccacttggctgaagaccaatggggctgtgaatgggaaggggagcctgaagggaagcctgga
gacatctaccaccagacctggggccagatactttgtgaagttcctggatgcctatgctgagaacaagctgcag
ttctgggctgtgactgctgagaatgagccttctgctgggctgctgtctggctaccccttccaatgcctgggctt
cacccctgagcatcagagggttcttccagggtgacctgggcccctaccctggccaacagcactcaccata
atgttaggtgctgatgctggatgaccagaggctgctgctgccccactgggctaagggtggtgctgactgacc
tgaggctgctaaatatgtgcatggcattgctgtgcattggtacctggactttctggctcctgccaaggccacc
tgggggagaccacaggtgttcccaacacatgctgtttgcctctgaggcctgtgtgggagcaagttctg
ggagcagctgtgagggtgggagctgggatagggggatgcagtacagccacagcatcatcaccaacctgc
tgtaccatgtggtgggctggactgactggaacctggccctgaacctgaggaggacctaactgggtcagaa
actttgtggacagccccatcattgtggacatcaccaaggacacctttacaagcagccccatgttctaccact
gggcccacttcagcaagttcatccctgagggtgagccagagagtggtgggctggtggccagccagaagaatgac
tggatgctgtggctctgatgcacctgatggctctgctgtggtggtgctgaacaggagctctaaggatgtg
cctctgacctcaaggatcctgctgtgggcttctggagaccatcagccctggctacagcatccacacctac
ctgtggaggaggcagtga

SEQ ID NO: 48

atggagttttcaagtccttccagagaggaatgtcccaagcctttgagtagggtaagcatcatggctggcagcc
tcacaggattgcttctacttcaggcagtgctgtgggcatcaggtgccaggccctgcatccctaagagctttgg
ctacagctctgtggtgtgtgtgtgcaatgccacctactgtgacagctttgacccccccacctttcctgccctgg
gcaccttcagcagatatgagagcaccaggtctgggaggaggatggagctgagcatggggcccatccaggct
aatcacactggcactggcctgctgctgaccctgcagcctgagcagaagttccagaaagtaaagggttttggg
ggggccatgactgatgctgctgctgaacatcctggccctgagccccctgcccagaatctgctgctgaag
agctacttctctgaggagggttggctataacatcatcagggtgcccatggccagctgtgacttcagcatca
ggacctacacctatgctgacaccctgatgattccagctgcacaacttcagcctgcctgaggaggatacca
agctgaagatcccactgatccacagggtctgcagctggcccagaggcctgtgagcctgctggccagcccct
ggaccagccccacttggctgaagaccaatggggctgtgaatgggaaggggagcctgaagggaagcctgga
gacatctaccaccagacctggggccagatactttgtgaagttcctggatgcctatgctgagcacaagctgcagt
tctgggctgtgactgctgagaatgagccttctgctgggctgctgtctggctaccccttccaatgcctgggctt
accctgagcatcagagggttcttccagggtgacctgggcccctaccctggccaacagcactcacaacaa
tgttaggtgctgatgctggatgaccagaggctgctgctgccccactgggctaagggtggtgctgactgacct
gaggctgctaaatatgtgcatggcattgctgtgattggtacctggactttctggctcctgccaaggccacct
gggggagagaccacagggtgttcccaacacatgctgtttgcctctgaggcctgtgtgggagcaagttctgg

Figure 11 (cont)

34/57

gagcagtctgtgaggctgggcagctgggataggggatgcagtacagccacagcatcatcaccaacctgct
gtacatgtggtgggctggactgactggaacctggccctgaacctgagggaggacctaactgggtcagaaa
ctttgtggacagcccatcattgtggacatcaccaaggacaccttttacaagcagcccatgttctaccacctg
ggccacttcagcaagttcatccctgagggcagccagagagtggggctggtggccagccagaagaatgacct
ggatgctgtggctctgatgcacctgatggctctgctgtggtggtgctgaacaggagctctaaggatgtgc
ctctgacatcaaggatcctgctgtgggcttctggagaccatcagccctggctacagcatccacacctacct
gtggaggaggcagtga

SEQ ID NO: 49

atggagttttcaagtccttccagagaggaatgtccaagcctttgagtagggtaagcatcatggctggcagcc
tcacaggattgcttctacttcaggcagtgctgtgggcatcaggtgccaggccctgcatccctaagagctttgg
ctacagctctgtggtgtgtgtgcaatgccacctactgtgacagctttgacccccccacctttctgccctgg
gcaccttcagcagatatgagagcaccaggtctgggaggaggatggagctgagcatggggcccatccaggct
aatcacactggcactggcctgctgctgacctgcagcctgagcagaagtccagaaagtaaagggtttgga
ggggccatgactgatgctgctgctgaacatcctggccctgagccccctgcccagaatctgctgctgaag
agctacttctctgaggagggttggctataacatcatcaggggtgcccatggccagctgtgacttcagcatca
ggacctacacctatgctgacacctctgatgattccagctgcacaacttcagcctgcctgaggaggatacca
agctgaagatcccactgatccacagggtctgcagctggcccagaggcctgtgagcctgctggccagccccct
ggaccagccccacttggtgaagaccaatggggctgtgaatgggaaggggagcctgaaggagacgcctgga
gacatctaccaccagacctggggccagatactttgtgaagttcctggatgcctatgctgagcacaagctgcagt
tctgggctgtgactgctgagaatgagccttctgctgggctgctgctggctaccttccaatgcctgggcttc
acctctgagcatcagagggaacttcattgccagggacctgggcccctacctggccaacagcactcaccataat
gttaggctgctgatgctggatgaccagaggctgctgctgccccactgggctaagggtggtgctgactgacctg
aggctgctaaatatgtgcatggcattgctgtgcattggtacctggactttctggctcctgccaaggccacctg
ggggagaccacaggctgttccccaacacctgctgtttgcctctgaggcctgtgtgggcagcaagtctggg
agcagtctgtgaggctgggcagctgggatagggggatgcagtacagcaagagcatcatcaccaacctgctgt
accatgtggtgggctggactgactggaacctggccctgaacctgaggaggacctaactgggtcagaaact
ttgtggacagcccatcattgtggacatcaccaaggacaccttttacaagcagcccatgttctaccacctggg
ccacttcagcaagttcatccctgagggcagccagagagtggggctggtggccagccagaagaatgacctgg
atgctgtggctctgatgcacctgatggctctgctgtggtggtgctgaacaggagctctaaggatgtgcct
ctgacatcaaggatcctgctgtgggcttctggagaccatcagccctggctacagcatccacacctacctgt
ggaggaggcagtga

SEQ ID NO: 50

atggagttttcaagtccttccagagaggaatgtccaagcctttgagtagggtaagcatcatggctggcagcc
tcacaggattgcttctacttcaggcagtgctgtgggcatcaggtgccaggccctgcatccctaagagctttgg
ctacagctctgtggtgtgtgtgcaatgccacctactgtgacagctttgacccccccacctttctgccctgg
gcaccttcagcagatatgagagcaccaggtctgggaggaggatggagctgagcatggggcccatccaggct
aatcacactggcactggcctgctgctgacctgcagcctgagcagaagtccagaaagtaaagggtttgga
ggggccatgactgatgctgctgctgaacatcctggccctgagccccctgcccagaatctgctgctgaag
agctacttctctgaggagggttggctataacatcatcaggggtgcccatggccagctgtgacttcagcatca
ggacctacacctatgctgacacctctgatgattccagctgcacaacttcagcctgcctgaggaggatacca

Figure 11 (cont)**35/57**

agctgaagatccactgatccacagggctctgcagctggcccagaggcctgtgagcctgctggccagcccct
ggaccagccccacttggctgaagaccaatggggctgtgaatgggaaggggagcctgaaggacagcctgga
gacatctaccaccagacctggggccagatactttgtgaagttcctggatgcctatgctgagcacaagctgcagt
tctgggctgtgactgctgagaatgagccttctgctgggctgctgtctggctaccccttccaatgcctgggcttc
accctgagcatcagagggacttcattgccagggacctgggccctaccctggccaacagcactcaccataat
gttaggctgctgatgctggatgaccagaggctgctgctgccccactgggctaagggtggtgctgactgaccctg
aggctgctaaatatgtgcatggcattgctgtgcattggtacctggactttctggctcctgccaaggccaccctg
ggggagacccacaggctgttccccaacacccatgctgtttgcctctgaggcctgtgtgggcagcaagtctggg
agcagtctgtgaggctgggcagctgggatagggggatgcagtacagccacagcatcatcaccaacctgctgt
accatgtggtgggctggactgactggaacctggccctgaacctgaggaggacctaactgggtcagaaact
ttgtggacagccccatcattgtggacatcaccaaggacacctttacaagcagcccatgttctaccacctggg
ccacttcagcaagttcatccctgagggcagccagagagtggggctggtggccagccagaagaatgacctgg
atgctgtggctctgatgaagcctgatggctctgctgtggtggtggtgctgaacaggagctctaaggatgtgcct
ctgacctcaaggatcctgctgtgggcttctggagacctcagccctggctacagcatccacacctacctgt
ggaggaggcagtga

SEQ ID NO: 51

atggagttttcaagtccttccagagaggaatgtcccaagcctttgagtagggtaagcatcatggctggcagcc
tcacaggattgcttctacttcaggcagtgctgtggcatcaggtgccaggccctgcatccctaagagctttgg
ctacagctctgtggtgtgtgtgtgcaatgccacctactgtgacagctttgacccccacctttctgccctgg
gcaccttcagcagatatgagagcaccaggtctgggaggaggatggagctgagcatggggcccatccaggct
aatcacactggcactggcctgctgctgacctgcagcctgagcagaagttccagaaagtaaagggtttgga
ggggccatgactgatgctgctgctgaacatcctggccctgagccccctgcccagaatctgctgctgaag
agctacttctctgaggagggcattggctataacatcatcagggtgcccatggccagctgtgacttcagcatca
ggacctacacctatgctgacacctgatgattccagctgcacaacttcagcctgcctgaggaggatacca
agctgaagatccactgatccacagggctctgcagctggcccagaggcctgtgagcctgctggccagcccct
ggaccagccccacttggctgaagaccaatggggctgtgaatgggaaggggagcctgaaggacagcctgga
gacatctaccaccagacctggggccagatactttgtgaagttcctggatgcctatgctgagcacaagctgcagt
tctgggctgtgactgctgagaatgagccttctgctgggctgctgtctggctaccccttccaatgcctgggcttc
accctgagcatcagagggacttcattgccagggacctgggccctaccctggccaacagcactcaccataat
gttaggctgctgatgctggatgaccagaggctgctgctgccccactgggctaagggtggtgctgactgaccctg
aggctgctaaatatgtgcatggcattgctgtgcattggtacctggactttctggctcctgccaaggccaccctg
ggggagacccacaggctgttccccaacacccatgctgtttgcctctgaggcctgtgtgggcagcaagtctggg
agcagtctgtgaggctgggcagctgggatagggggatgcagtacagccacagcatcatcaccaacctgctgt
accatgtggtgggctggactgactggaacctggccctgaacctgaggaggacctaactgggtcagaaact
ttgtggacagccccatcattgtggacatcaccaaggacacctttacaagcagcccatgttctaccacctggg
ccacttcagcaagttcatccctgagggcagccagagagtggggctggtggccagccagaagaatgacctgg
atgctgtggctctgatgcatcctgatggctctgctgtggtggtggtgctgaacaggagctctaaggatgtgcct
ctgacctcaaggatcctgctgtgggcttctggagacctcagccctggctacagcatccacacctacctgt
ggaacaggcagtga

SEQ ID NO: 52

atggagttttcaagtccttccagagaggaatgtcccaagcctttgagtagggtaagcatcatggctggcagcc

Figure 11 (cont)

36/57

tcacaggattgcttctacttcaggcagtgctgtgggcatcaggtgccaggccctgcatccctaagagctttgg
ctacagctctgtggtgtgtgtgtgcaatgccacctactgtgacagctttgacccccccacctttcctgccctgg
gcaccttcagcagatatgagagcaccaggtctgggaggaggatggagctgagcatggggcccatccaggct
aatcacactggcactggcctgctgctgaccctgcagcctgagcagaagttccagaaagtaaagggtttgga
ggggccatgactgatgctgctgctgaacatcctggccctgagccccctgccagaatctgctgctgaag
agctacttctctgaggagggttggctataacatcatcaggggtgcccatggccagctgtgacttcagcatca
ggacctacacctatgctgacaccctgatgattccagctgctgaacttcagcctgcctgaggaggatacca
agctgaagatcccactgatccacagggctctgcagctggcccagaggcctgtgagcctgctggccagccccct
ggaccagccccacttggctgaagaccaatggggctgtgaatgggaaggggagcctgaagggacagcctgga
gacatctaccaccagacctggggccagatactttgtgaagttcctggatgcctatgctgagcacaagctgcagt
tctgggctgtgactgctgagaatgagccttctgctgggctgctgtctggctacccttccaatgcctgggcttc
accctgagcatcagagggttcttccagggacctgggcccctaccctggccaacagcactcaccataat
gttaggctgctgatgctggatgaccagaggctgctgctgccccactgggctaagggtggtgctgactgacctg
aggctgctaaatatgtgcatggcattgctgtgattggtacctggactttctggctcctgccaaaggccacctg
ggggagaccacaggtgttccccaacacatgctgtttgcctctgaggcctgtgtgggagcaagttctggg
agcagtctgtgaggctgggagctgggatagggggatgcagtacagccacagcatcatcaccaacctgctgt
accatgtggtgggctggactgactggaacctggccctgaacctgagggaggacctaactgggtcagaaact
ttgtggacagccccatcattgtggacatcaccaaggacaccttttacaagcagcccatgttctaccacctggg
ccacttcagcaagttcatccctgagggcagccagagagtggggctggtggccagccagaagaatgacctgg
atgctgtggctctgatgcatcctgatggctctgctgtgggtggtgctgaacaggagctctaaggatgtgcct
ctgacctcaaggatcctgctgtgggcttctggagacctcagccctggctacagcatccacacctacctgt
ggaggaggcagtg

SEQ ID NO: 53

atggagttttcaagtccctccagagaggaatgtccaagcctttgagtagggtaagcatcatggctggcagcc
tcacaggattgcttctacttcaggcagtgctgtgggcatcaggtgccaggccctgcatccctaagagctttgg
ctacagctctgtggtgtgtgtgtgcaatgccacctactgtgacagctttgacccccccacctttcctgccctgg
gcaccttcagcagatatgagagcaccaggtctgggaggaggatggagctgagcatggggcccatccaggct
aatcacactggcactggcctgctgctgaccctgcagcctgagcagaagttccagaaagtaaagggtttgga
ggggccatgactgatgctgctgctgaacatcctggccctgagccccctgccagaatctgctgctgaag
agctacttctctgaggagggttggctataacatcatcaggggtgcccatggccagctgtgacttcagcatca
ggacctacacctatgctgacaccctgatgattccagctgctgaacttcagcctgcctgaggaggatacca
agctgaagatcccactgatccacagggctctgcagctggcccagaggcctgtgagcctgctggccagccccct
ggaccagccccacttggctgaagaccaatggggctgtgaatgggaaggggagcctgaagggacagcctgga
gacatctaccaccagacctggggccagatactttgtgaagttcctggatgcctatgctgagcacaagctgcagt
tctgggctgtgactgctgagaatgagccttctgctgggctgctgtctggctacccttccaatgcctgggcttc
accctgagcatcagagggttcttccagggacctgggcccctaccctggccaacagcactcaccataat
gttaggctgctgatgctggatgaccagaggctgctgctgccccactgggctaagggtggtgctgactgacctg
aggctgctaaatatgtgcatggcattgctgtgattggtacctggactttctggctcctgccaaaggccacctg
ggggagaccacaggtgttccccaacacatgctgtttgcctctgaggcctgtgtgggagcaagttctggg
agcagtctgtgaggctgggagctgggatagggggatgcagtacagccacagcatcatcaccaacctgctgt
accatgtggtgggctggactgactggaacctggccctgaacctgagggaggacctaactgggtcagaaact
ttgtggacagccccatcattgtggacatcaccaaggacaccttttacaagcagcccatgttctaccacctggg

Figure 11 (cont)

37/57

ccacttcagcaagttcatccctgagggcagccagagagtggggctggtggccagccagaagaatgacctgg
atgctgtggctctgatgcatcctgatggctctgctgtgggtgggtgctgaacaggagctctaaggatgtgcct
ctgaccatcaaggatcctgctgtgggcttctggagaccatcagccctggctacagcatccacacctacctgt
ggaggaggcagtga

SEQ ID NO: 54

atggagttttcaagtccttccagagaggaatgtcccaagcctttgagtagggtaagcatcatggctggcagcc
tcacaggattgcttctacttcaggcagtgctgtgggcatcaggtgccaggccctgcatccctaagagctttgg
ctacagctctgtggtgtgtgtgcaatgccacctactgtgacagctttgacccccccacctttcctgccctgg
gcaccttcagcagatatgagagcaccaggtctgggaggaggatggagctgagcatggggcccatccaggct
aatcacactggcactggcctgctgctgacctgcagcctgagcagaagttccagaaagtaaagggtttgga
ggggccatgactgatgctgctgctgaacatcctggccctgagccccctgcccagaatctgctgctgaag
agctacttctctgaggagggcattggctataacatcatcaggggtgcccatggccagctgtgacttcagcatca
ggacctacacctatgctgacacccctgatgattccagctgcacaacttcagcctgcctgaggaggatacca
agctgaagatcccatgatccacagggctctgcagctggcccagaggcctgtgagcctgctggccagccccct
ggaccagccccacttggtgaagaccaatggggctgtgaatgggaaggaggcctgaaggagacagcctgga
gacatctaccaccagacctggggcagatactttgtgaagttcctggatgcctatgctgagcacaagctgcagt
tctgggctgtgactgctgagaatgagccttctgctgggctgctgtctggctaccccttccaatgcctgggcttc
accctgagcatcagaggggacttcattgccaggggacctggggccctaccctggccaacagcactcaccataat
gttaggctgctgatgctggatgaccagaggctgctgctgccccactgggctaagggtggtgctgactgacctg
aggctgctaaatatgtgcatggcattgctgtgcattggtacctggactttctggctcctgccaaggccaccctg
ggggagaccacaggctgttccccaacacatgctgtttgcctctgaggcctgtgtgggcagcaagtctggg
agcagtctgtgaggctgggcagctgggatagggggatgcagtacagccacagcatcatccaacctgctgt
accatgtggtgggctggactgactggaacctggccctgaacctgaggaggacctaactgggtcagaaact
ttgtggacagccccatcattgtggacatccaaggacaccttttacaagcagccccatgttctaccacctggg
ccacttcagcaagttcatccctgagggcagccagagagtggggctggtggccagccagaagaattgcctgg
atgctgtggctctgatgcatcctgatggctctgctgtgggtgggtgctgaacagggtgctctaaggatgtgcct
ctgaccatcaaggatcctgctgtgggcttctggagaccatcagccctggctacagcatccacacctacctgt
ggaggaggcagtga

SEQ ID NO: 55

atggagttttcaagtccttccagagaggaatgtcccaagcctttgagtagggtaagcatcatggctggcagcc
tcacaggattgcttctacttcaggcagtgctgtgggcatcaggtgccaggccctgcatccctaagagctttgg
ctacagctctgtggtgtgtgtgcaatgccacctactgtgacagctttgacccccccacctttcctgccctgg
gcaccttcagcagatatgagagcaccaggtctgggaggaggatggagctgagcatggggcccatccaggct
aatcacactggcactggcctgctgctgacctgcagcctgagcagaagttccagaaagtaaagggtttgga
ggggccatgactgatgctgctgctgaacatcctggccctgagccccctgcccagaatctgctgctgaag
agctacttctctgaggagggcattggctataacatcatcaggggtgcccatggccagctgtgacttcagcatca
ggacctacacctatgctgacacccctgatgattccagctgcacaacttcagcctgcctgaggaggatacca
agctgaagatcccatgatccacagggctctgcagctggcccagaggcctgtgagcctgctggccagccccct
ggaccagccccacttggtgaagaccaatggggctgtgaatgggaaggaggcctgaaggagacagcctgga
gacatctaccaccagacctggggcagatactttgtgaagttcctggatgcctatgctgagcacaagctgcagt

38/57

Figure 11 (cont)

tctgggctgtgactgctgagaatgagccttctgctgggctgctgtctggctaccccttccaatgcctgggcttc
accctgagcatcagagggacttcattgccaggacctgggccctaccctggccaacagcactcaccataat
gttaggctgctgatgctggatgaccagaggctgctgctgccccactgggctaaggtggtgctgactgaccctg
aggctgctaaatatgtgcatggcattgctgtgcattggtacctggactttctggctcctgccaaggccaccctg
ggggagaccacaggctgttccccaacaccatgctgtttgcctctgaggcctgtgtgggcagcaagtctctggg
agcagtctgtgaggctgggcagctgggatagggggatgcagtacagccacagcatcatcaccaacctgctgt
accatgtggtgggctggactgactggaacctggccctgaacctgagggaggacctaactgggtcagaaact
ttgtggacagccccatcattgtggacatcaccaaggacaccttttacaagcagcccatgttctaccacctggg
ccacttcagcaagttcatccctgagggcagccagagagtggggctggtggccagccagaagaatgacctgg
atgctgtggctctgatgcatcctgatggctgctgtgtggtggtgctgaacaggagctctaaggatgtgcct
ctgacctcaaggatcctgctgtgggcttctggagacctcagccctggctacagcatccacacctacctgt
ggtgcaggcagtga

SEQ ID NO: 56

atggagttttcaagtccttccagagaggaatgtcccaagcctttgagtagggtaagcatcatggctggcagcc
tcacaggattgcttctacttcaggcagtgctgtggcatcaggtgccaggccctgcatccctaagagctttgg
ctacagctctgtggtgtgtgtgtgcaatgccacctactgtgacagctttgacccccccaccttctgcctgg
gcaccttcagcagatatgagagcaccaggctctgggaggaggatggagctgagcatggggcccatccaggct
aatcacactggcactggcctgctgctgacctgagcctgagcagaagtccagaaagtaaagggtttgga
ggggccatgactgatgctgctgctgaacatcctggccctgagccccctgccagaatctgctgctgaag
agctacttctctgaggagggttggctataacatcatcagggtgccccatggccagctgtgacttcagcatca
ggacctacacctatgctgacacctgatgattccagctgcacaacttcagcctgcctgaggaggatacca
agctgaagatcccatgatccacagggtctgagctggcccagaggcctgtgagcctgctggccagccct
ggaccagccccacttggtgaagaccaatggggctgtgaatgggaaggaggagcctgaaggagacagcctgga
gacatctaccaccagacctggggcagatactttgtgaagttcctggatgcctatgctgagcacaagctgcagt
tctgggctgtgactgctgagaatgagccttctgctgggctgctgtctggctaccccttccaatgcctgggcttc
accctgagcatcagagggacttcattgccaggacctgggccctaccctggccaacagcactcaccataat
gttaggctgctgatgctggatgaccagaggctgctgctgccccactgggctaaggtggtgctgactgaccctg
aggctgctaaatatgtgcatggcattgctgtgcattggtacctggactttctggctcctgccaaggccaccctg
ggggagaccacaggctgttccccaacaccatgctgtttgcctctgaggcctgtgtgggcagcaagtctctggg
agcagtctgtgaggctgggcagctgggatagggggatgcagtacagccacagcatctgcaccaacctgctgt
accatgtggtgggctggactgactggaacctggccctgaacctgagggaggacctaactgggtcagaaact
ttgtggacagccccatcattgtggacatcaccaaggacaccttttacaagcagcccatgttctaccacctggg
ccacttcagcaagttcatccctgagggcagccagagagtggggctggtggccagccagaagaatgacctgt
gctgtgtggctctgatgcatcctgatggctctgctgtgtggtggtgctgaacaggagctctaaggatgtgcct
ctgacctcaaggatcctgctgtgggcttctggagacctcagccctggctacagcatccacacctacctgt
ggaggaggcagtga

39/57

Figure 11 (cont)

SEQ ID NO: 57

gtaaatataaaatttttaagtgtataatgtgttaaactactgattctaattgtttctctcttttag

SEQ ID NO: 58

ctgtgccttctagttgccagccatctgttgtttgccctccccctgccttccttgaccctggaaggtgccactc
ccactgtcctttcctaataaaatgaggaaattgcatcgcattgtctgagtaggtgtcattctattctgggggt
ggggtggggcaggacagcaagggggaggattgggaagacaatagcaggcatgctgggga

SEQ ID NO: 59

gccaggccctgcatccctaagagctttggctacagctctgtggtgtgtgtgcaatgccacctactgtgaca
gctttgacccccacctttcctgccctgggcaccttcagcagatatgagagcaccaggctctgggaggagga
tggagctgagcatggggcccatccaggctaatacactggcactggcctgctgctgaccctgcagcctgagc
agaagttccagaaagtaaagggtttggaggggcatgactgatgctgctgctgaacatcctggccctga
gccccctgccagaatctgctgctgaagagctacttctctgaggagggcattggctataacatcatcagggt
gcccattggccagctgtgacttcagcatcaggacctacacctatgctgacaccctgatgatttcagctgcac
aacttcagcctgcctgaggaggataccaagctgaagatccactgatccacagggtctgcagctggcccag
aggcctgtgagcctgctggccagcccctggaccagccccacttggctgaagaccaatggggctgtgaatggg
aaggggagcctgaagggacagcctggagacatctaccaccagacctgggcccagatactttgtgaagtctctg
gatgcctatgctgagcacaagctgcagttctgggctgtgactgctgagaatgagccttctgctgggctgctgt
ctggctaccccttccaatgcctgggcttcacccttgagcatcagagggacttcattgccagggacctgggccc
taccctggccaacagcactcaccataatgttaggctgctgatgctggatgaccagaggctgctgctgcccc
ctgggctaagtggtgctgactgaccctgaggctgctaaatatgtgcatggcattgctgtgcattggtacctgg
actttctggctcctgccaaaggccaccctgggggagaccacaggctgttcccaacaccatgctgtttgcctc
tgaggcctgtgtggcagcaagttctgggagcagctgtgaggctgggcagctgggatagggggatgcagta
cagccacagcatcatcaccaacctgctgtaccatgtggtgggctggactgactggaacctggccctgaaccc
tgagggaggacctaactgggtcagaaactttgtggacagccccatcattgtggacatcaccaaggacacctt
ttacaagcagcccatgttctaccacctgggcccacttcagcaagttcatccctgaggggcagccagagagtggg
gctggtggccagccagaagaatgacctggatgctgtggctctgatgcatcctgatggctctgctgtggtggtg
gtgctgaacaggagctctaaggatgtgcctctgacctcaaggatcctgctgtgggcttctggagaccatca
gccctggctacagcatccacacctacctgtggaggaggcagtga

SEQ ID NO: 60

atggagttttcaagtccttcagagaggaatgtcccaagcctttgagtagggtaagcatcatggctggcagcc
tcacaggattgcttctacttcaggcagtgctgtgggcatcaggtgccaggccctgcatccctaagagctttgg
ctacagctctgtggtgtgtgtgcaatgccacctactgtgacagctttgacccccacctttcctgccctgg
gcaccttcagcagatatgagagcaccaggctctgggaggaggatggagctgagcatggggcccatccaggct

Figure 11 (cont)

aatcacactggcactggcctgctgctgaccctgcagcctgagcagaagttccagaaagtaaagggctttgga
ggggccatgactgatgctgctgctgaacatcctggccctgagccccctgccagaatctgctgctgaag
agctacttctctgaggaggcattggctataacatcatcagggtgcccatggccagctgtgacttcagcatca
ggacctacacctatgctgacaccctgatgatttcagctgcacaacttcagcctgcctgaggaggatacca
agctgaagatcccatgatccacagggctctgcagctggcccagaggcctgtgagcctgctggccagcccct
ggaccagccccacttggctgaagaccaatggggctgtgaatgggaaggggagcctgaaggacagcctgga
gacatctaccaccagacctggggcagatactttgtgaagttcctggatgcctatgctgagcacaagctgcagt
tctgggctgtgactgctgagaatgagccttctgctgggctgctgtctggctacccttccaatgcctgggcttc
accctgagcatcagagggacttcattgccagggacctgggcccctaccctggccaacagcactcaccataat
gttaggctgctgatgctggatgaccagaggctgctgctgccccactgggctaagggtggtgctgactgaccctg
aggctgctaaatatgtgatggcattgctgtgcattggtacctggactttctggctcctgccaaggccaccctg
ggggagacccacaggctgttccccaacacatgctgtttgcctctgaggcctgtgtgggcagcaagttctggg
agcagtctgtgaggctgggcagctgggataggggatgcagtacagccacagcatcatcaccaacctgctgt
accatgtggtgggctggactgactggaacctggccctgaacctgaggggaggacctaactgggtcagaaact
ttgtggacagccccatcattgtggacatcaccaaggacaccttttacaagcagcccatgttctaccacctggg
ccacttcagcaagttcatccctgagggcagccagagagtggggctggtggccagccagaagaatgacctgg
atgctgtggctctgatgcacctgatggctctgctgtggtggtggtgctgaacaggagctctaaggatgtgcct
ctgacctcaaggatcctgctgtgggcttctggagacctcagccctggctacagcatccacacctacctgt
ggaggaggcagtgga

SEQ ID NO: 61

atcaacctctggattacaaaatttgtaaagattgactgggtattcttaactatgttgctccttttacgctatgtg
gatacgctgctttaatgcctttgtatcatgctattgcttcccgtatggctttcattttctcctccttgataaatc
ctggttgctgtctctttatgaggagtgtggtggccgtgtgcaggcaacgtggcgtggtgtgactgtgttgctga
cgcaacccccactgggtggggcattgccaccacctgtcagctcctttccgggactttcgctttccccctcccta
ttgccacggcggaactcatcgccgcctgccttgcccgtgctggacaggggctcggctgttgggcactgaca
attccgtggtgttgctggggaaatcatcgctcctttccttggtgctgcctgtgttgccacctggattctgcgcg
ggacgtccttctgctacgtcccttcggccctcaatccagcggaccttccttcccgcggcctgctgccggctctg
cggcctcttccgcgtcttcgccttcgcctcagacgagtcggatctcctttggggccgcctccccgc

SEQ ID NO: 62

aatcaacctctggattacaaaatttgtaaagattgactgggtattcttaactatgttgctccttttacgctatgt
ggatacgctgctttaatgcctttgtatcatgctattgcttcccgtatggctttcattttctcctccttgataaat
cctgggttagttcttgccacggcggaactcatcgccgcctgccttgcccgtgctggacaggggctcggctgtt
gggcactgacaattccgtggt

Figure 11 (cont)

SEQ ID NO: 63

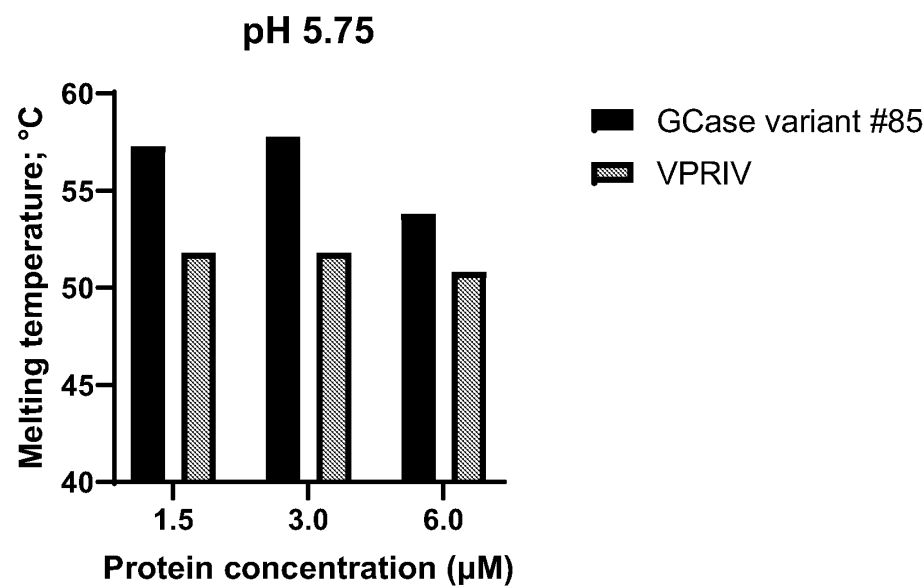
aatcaacctctggattacaaaatttgtgaaagattgactgggtattcttaactatgttgctccttttacgctatgt
ggatacgtgctttaatgcctttgtatcatgctattgcttcccgtatggctttcattttctcctccttgataaat
cctgggtgctgtctctttatgaggagttgtggccggtgtcaggcaacgtggcgtgggtgtgcactgtgtttgctg
acgcaacccccactggttggggcattgccaccacctgtcagctcctttccgggactttcgctttccccctccct
attgccacggcggaactcatcgccgcctgccttggccgctgctggacaggggctcggctgttggggcactgac
aattccgtgggtgtgtcggggaaatcatcgtcctttccttggctgctcgcctgtgttgccacctggattctgcgc
gggacgtccttctgtacgtcccttcggccctcaatccagcggaccttcttcccgcggtcgtgccggctct
gcggcctcttccgctcttcgccttcgccctcagacgagtcggatctcctttggggccgctccccgc

SEQ ID NO: 64

gcccccccctgcatccctaaaagcttcggctacagctcgggtggtgtgtgtctgcaatgccacatactgtgact
cctttgacccccgacctttcctgccccttggtaccttcagccgctatgagagtacacgcagtgggcgacggat
ggagctgagtatggggcccatccaggctaatacacacgggcacaggcctgctactgacctgcagccagaac
agaagttccagaaagtgaagggatttggaggggcatgacagatgctgctgcttcaacatccttgccctgt
cacccttgcctaaaatttgcctacttaaatcgtacttctctgaagaaggaatcggatataacatcatccgggt
acctatggccagctgtgacttctccatccgcacctacacctatgcagacaccctgatgatttccagttgcac
aacttcagcctcccagaggaagataccaagctcaagatacccctgattcaccgagccctgcagttggccca
gcgtcccgtttcactccttgccagccccctggacatcaccacttggctcaagaccaatggagcgggtgaatgg
gaaggggtcactcaagggacagcccggagacatctaccaccagacctgggcccagatactttgtgaagttcct
ggatgcctatgctgagcacaagttacagttctgggcagtgacagctgaaaatgagccttctgctgggctgttg
agtggataccccttccagtgcttgggttcacccctgaacatcagcgagacttcattgcccgtgacctaggtc
ctaccctcgccaacagtactcaccacaatgtccgcctactcatgctggatgaccaacgcttgcctgctgcccc
actgggcaaaggtggtactgacagaccagaagcagctaaatatgttcattggcattgctgtacattggtacc
tggactttctgggtccagccaaagccaccctaggggagacacaccgctgttcccaacaccatgctctttg
cctcagaggcctgtgtgggtccaagtctgggagcagagtggtcggttaggctcctgggatcgagggatgc
agtacagccacagcatcatcacgaacctcctgtacctatgtggtcggctggaccgactggaaccttgcctga
acccgaaggaggaccaattgggtgcgtaactttgtcgacagtcccatcattgtagacatcaccaaggaca
cgttttacaaacagcccatgttctaccaccttggccacttcagcaagttcattcctgagggctcccagagagt
ggggctgggtgacagtcagaagaacgacctggacgcagtggtgactgatgcatcccgatgggtctgctgtgtg
gtcgtgctaaaccgctcctctaaggatgtgcctcttaccatcaaggatcctgctgtgggtccttggagacaa
tctcacctggctactccattcacacctacctgtggcgtcgccagtga

Figure 12

A



B

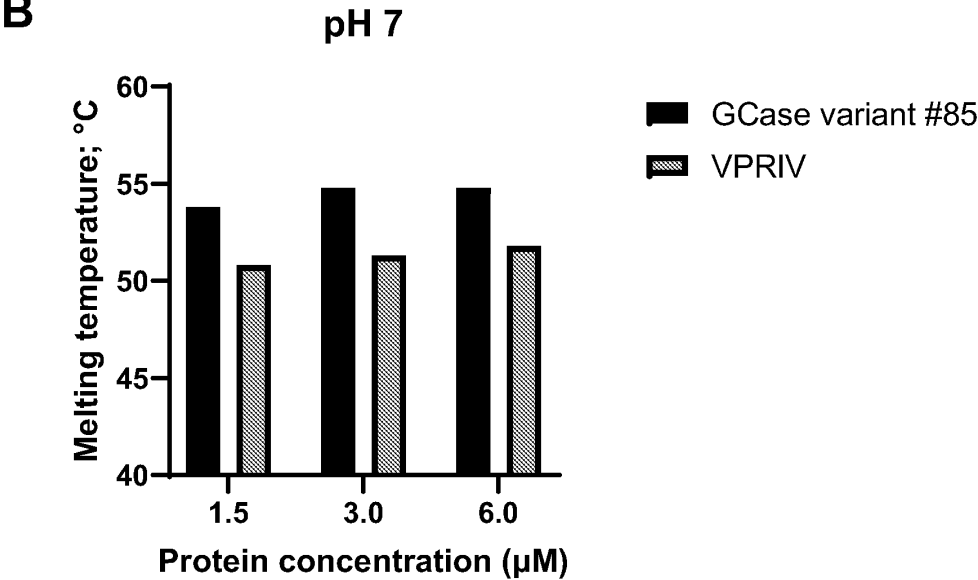
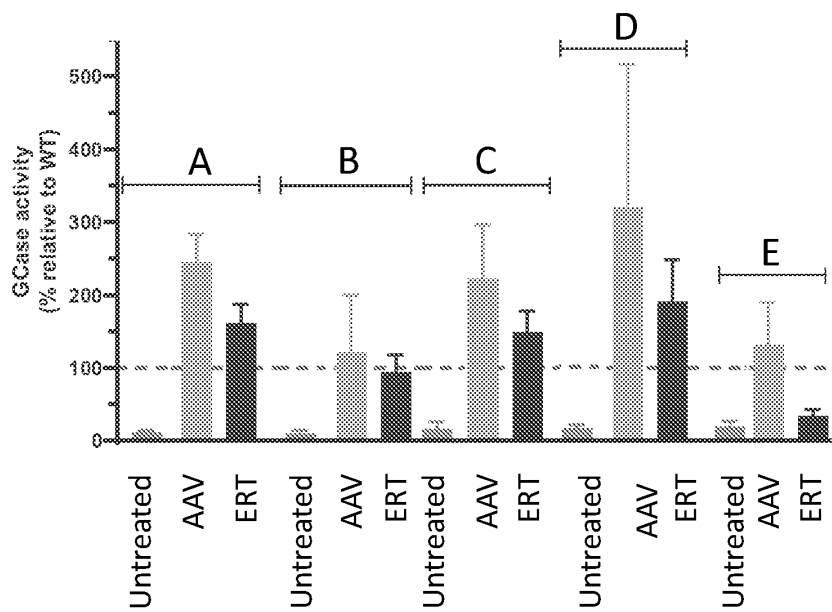
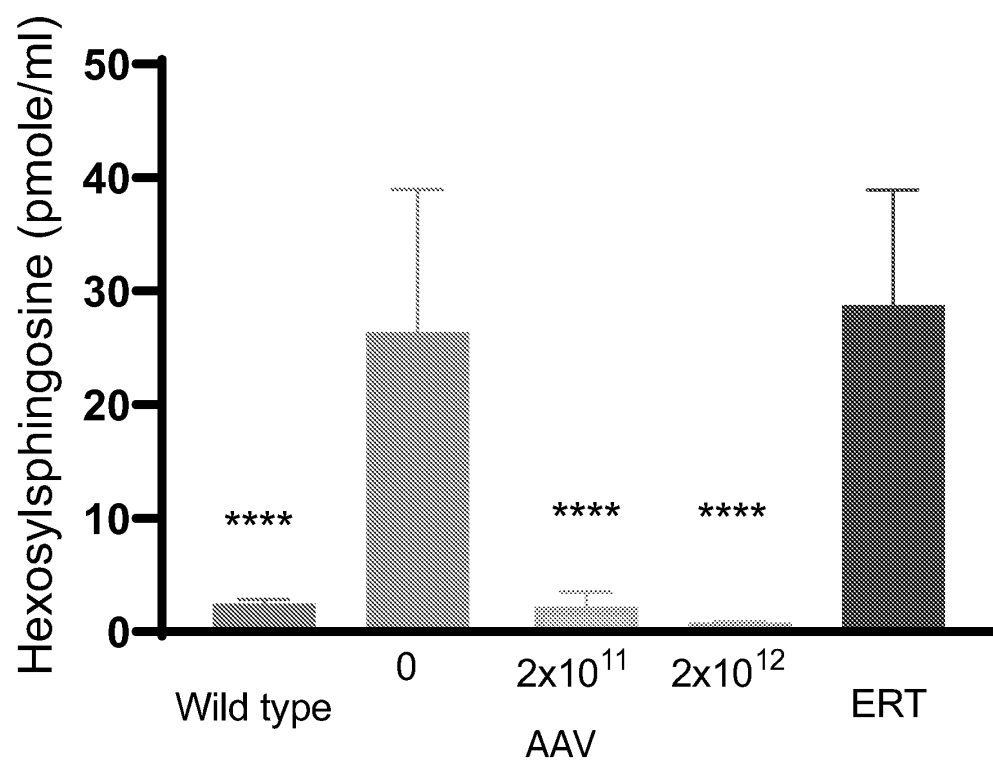


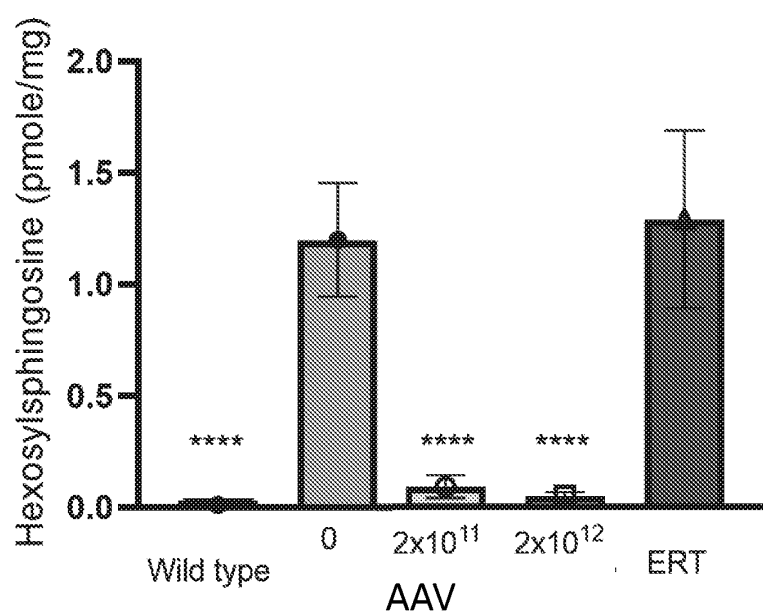
Figure 13



44/57

Figure 14

45/57

Figure 15A

46/57

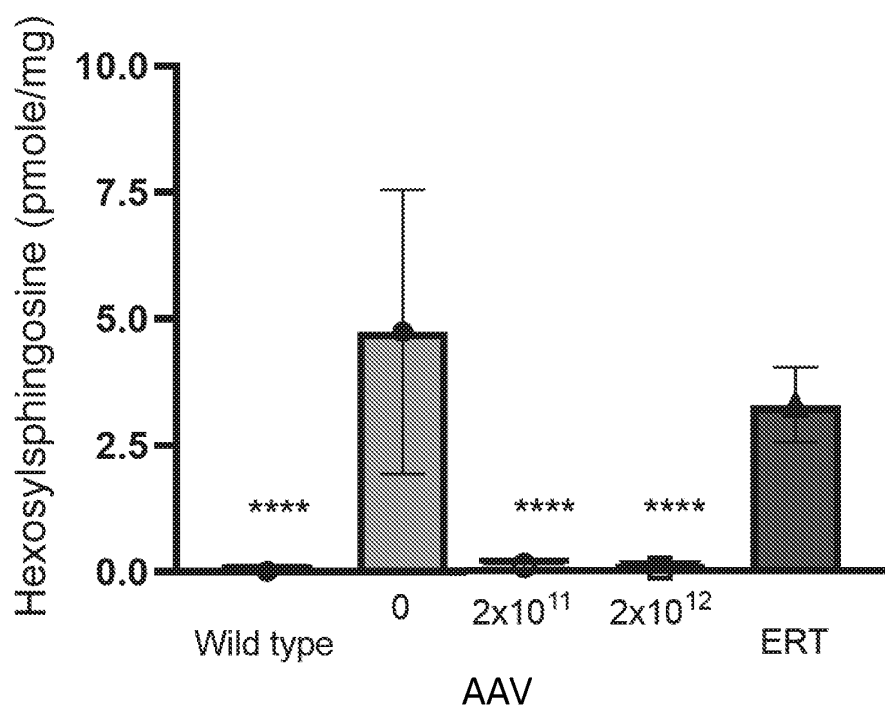
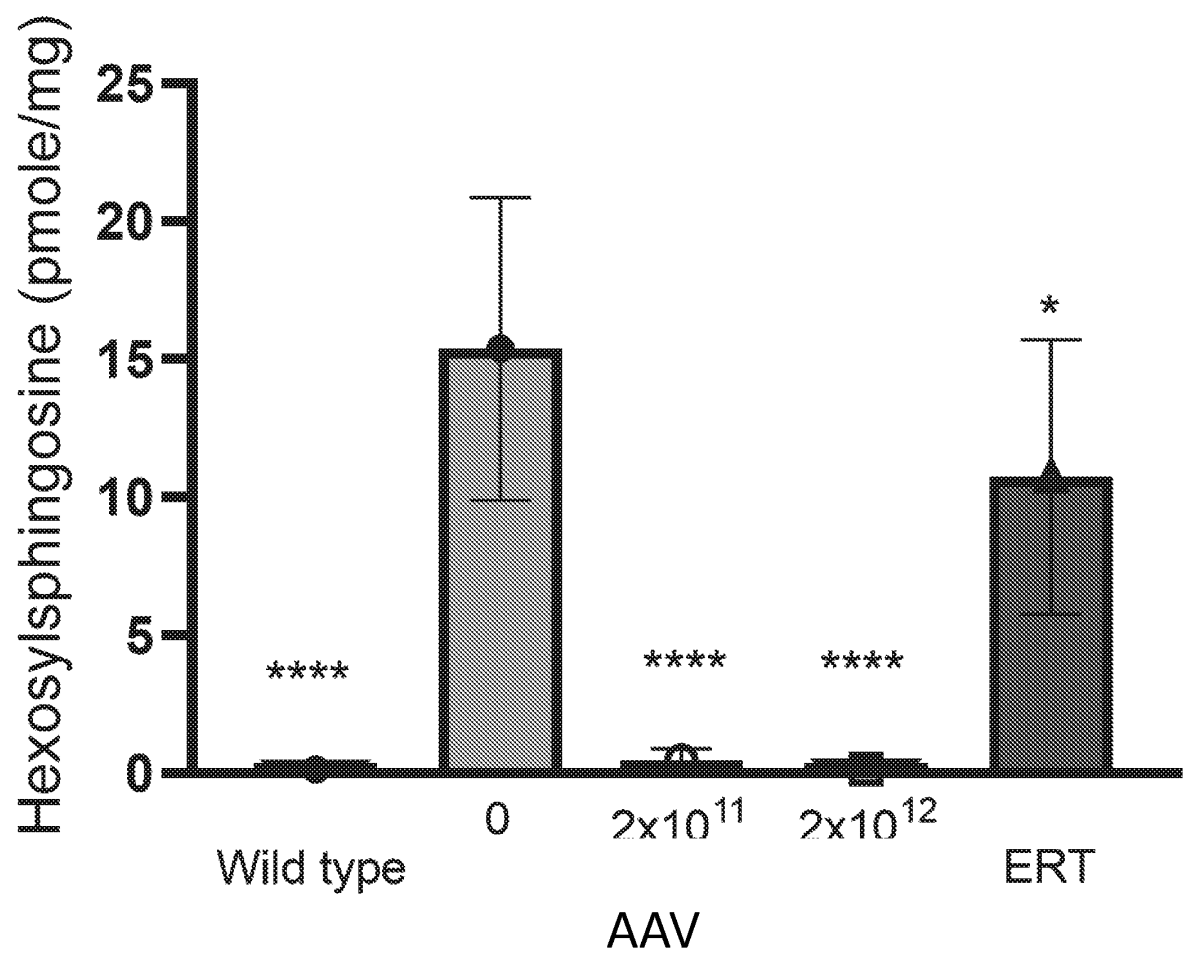
Figure 15B

Figure 15C



48/57

Figure 15D

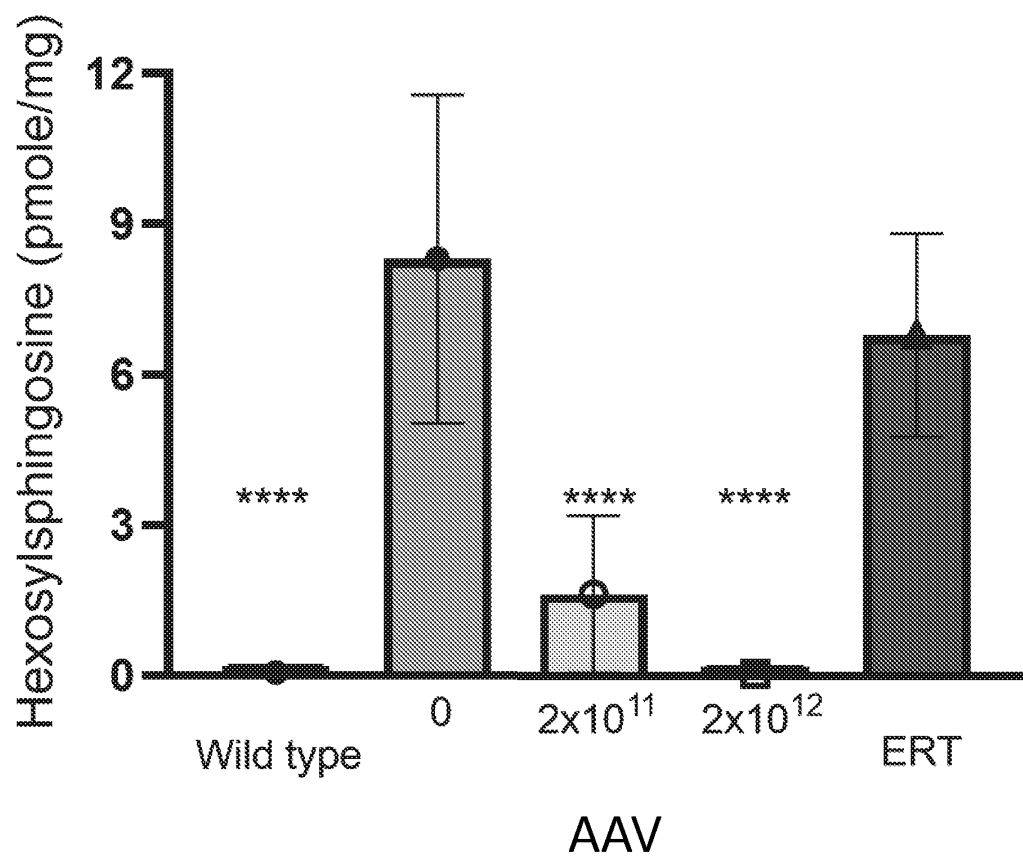
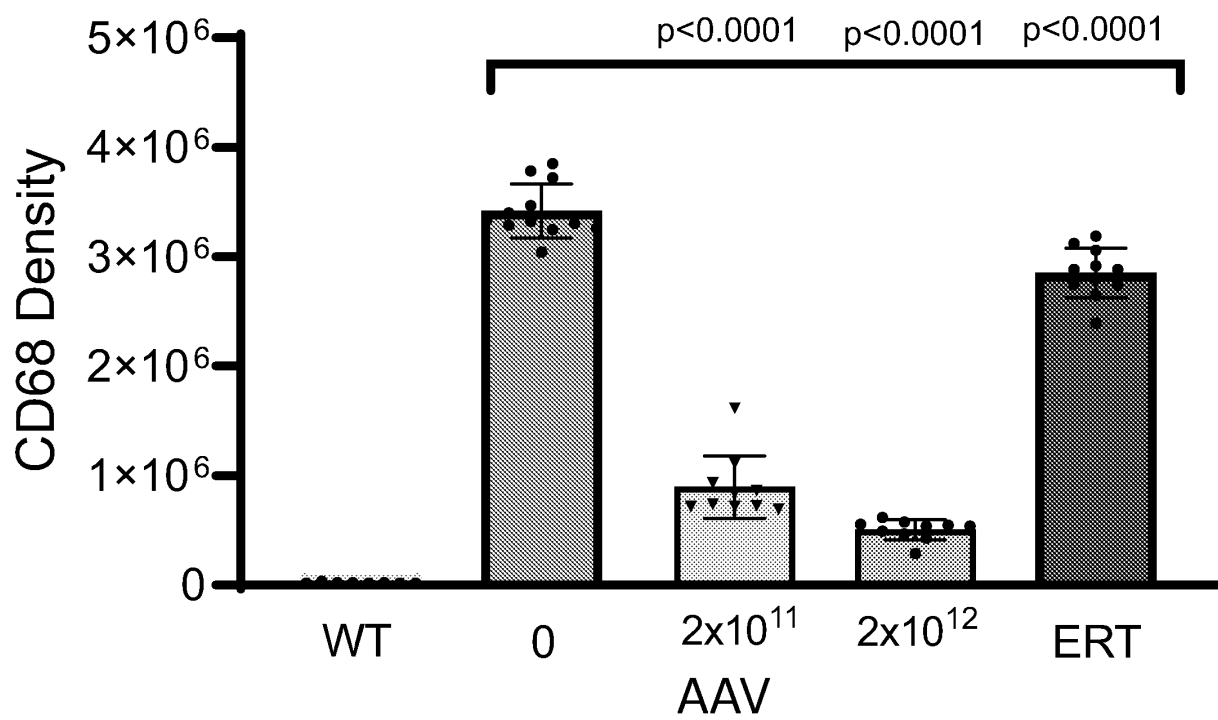


Figure 16A

50/57

Figure 16B

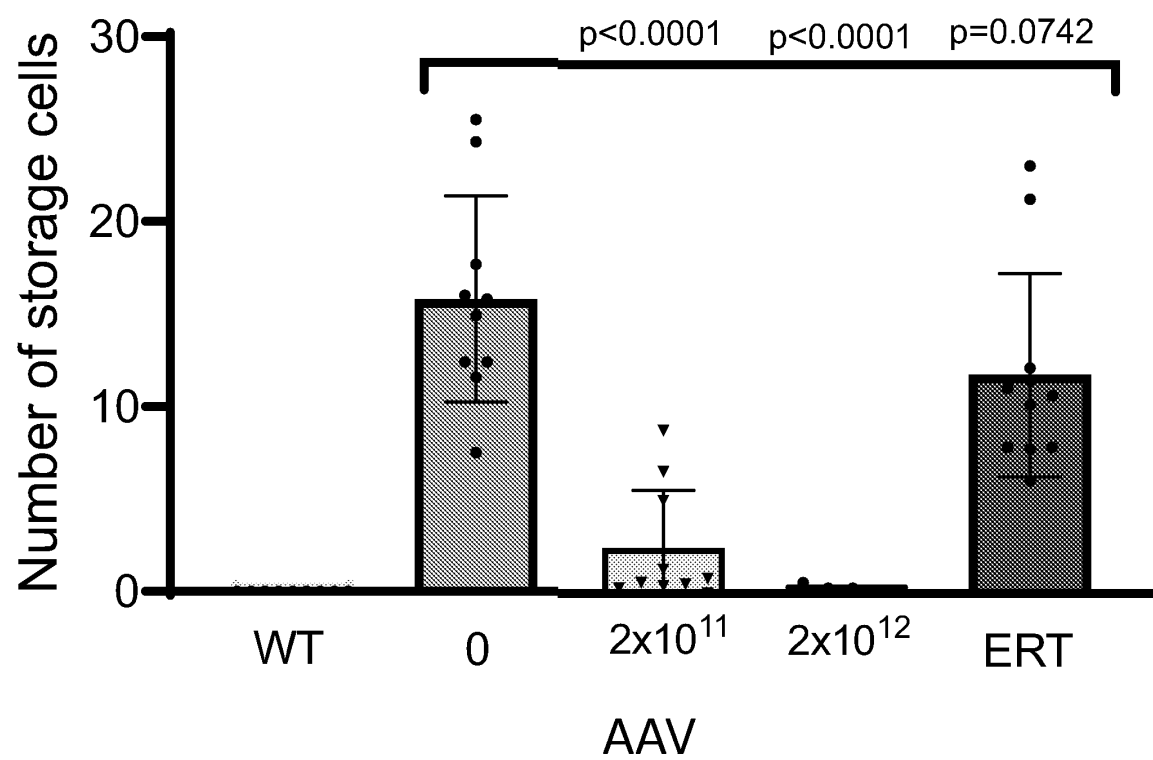


Figure 17 A

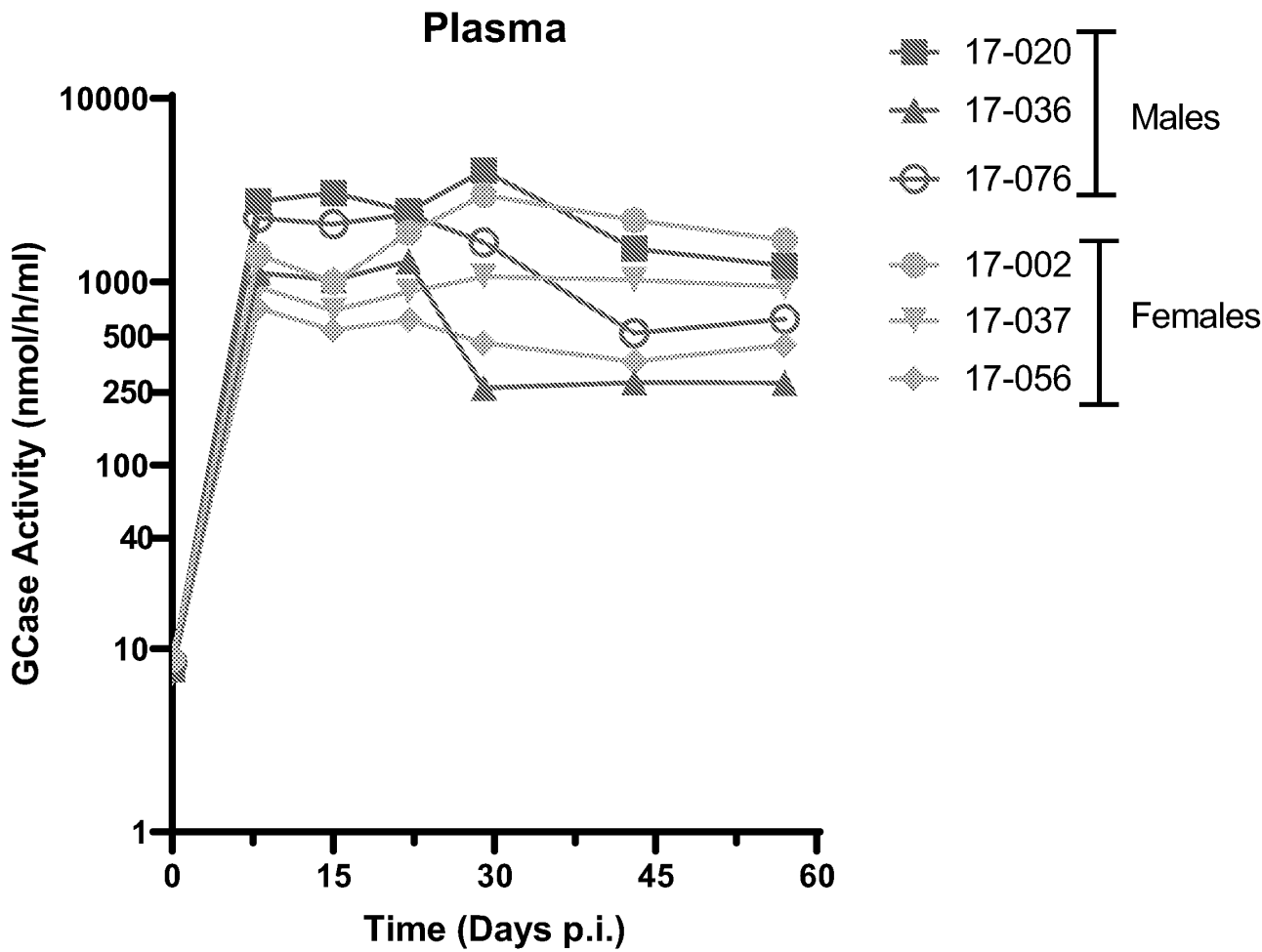


Figure 17B

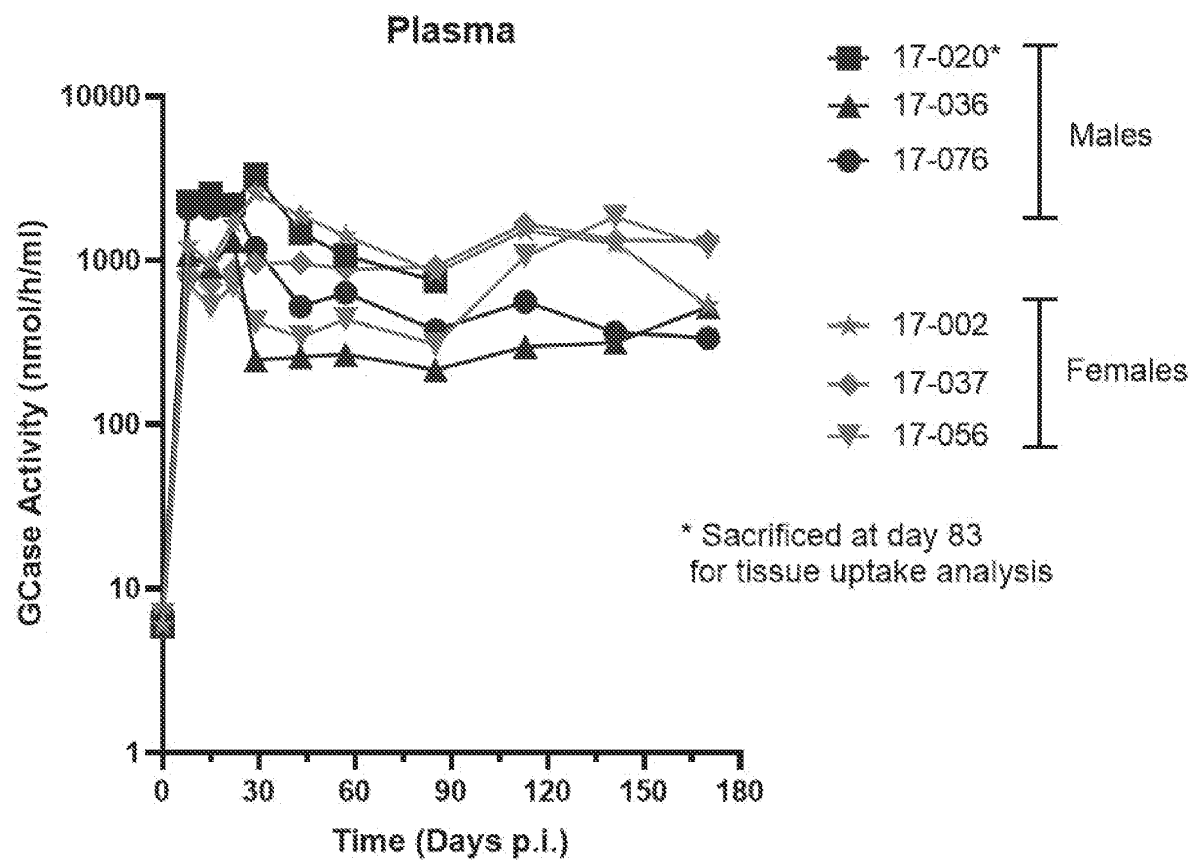


Figure 18

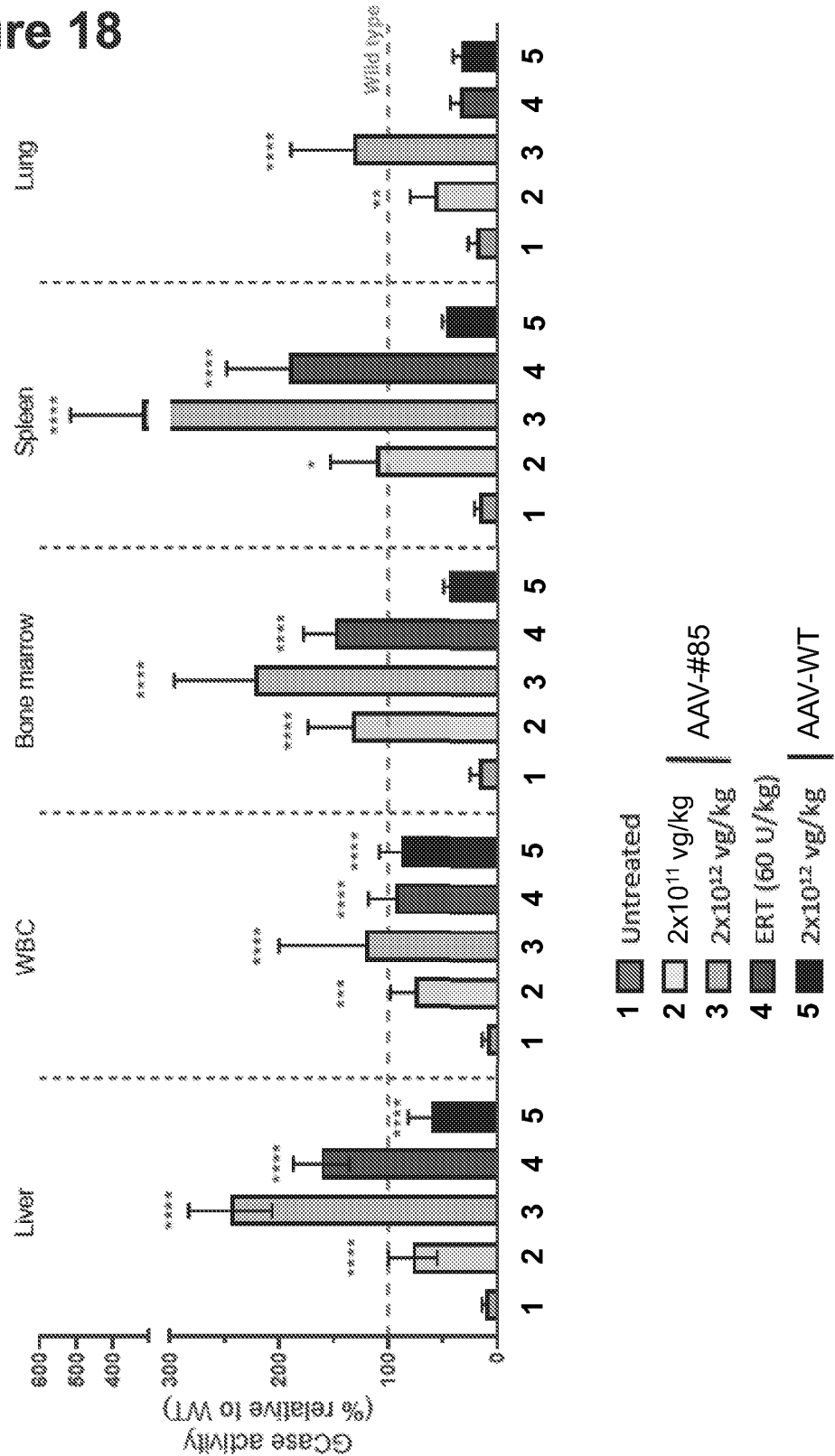
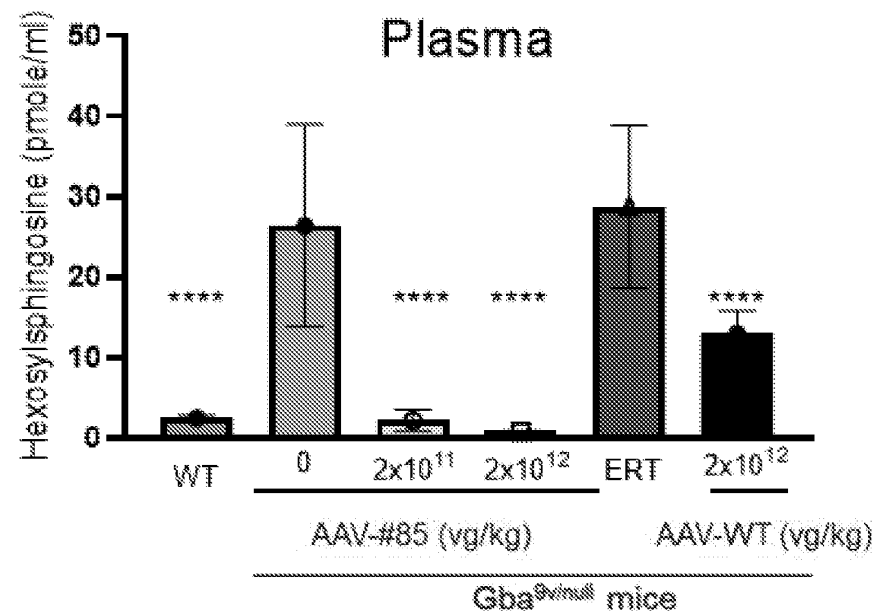


Figure 19

A



B

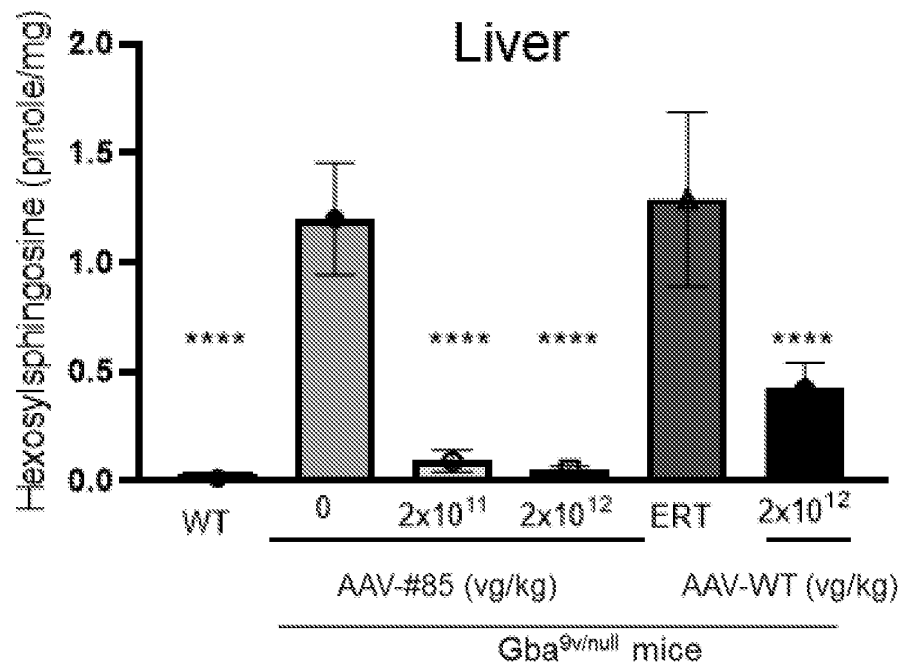
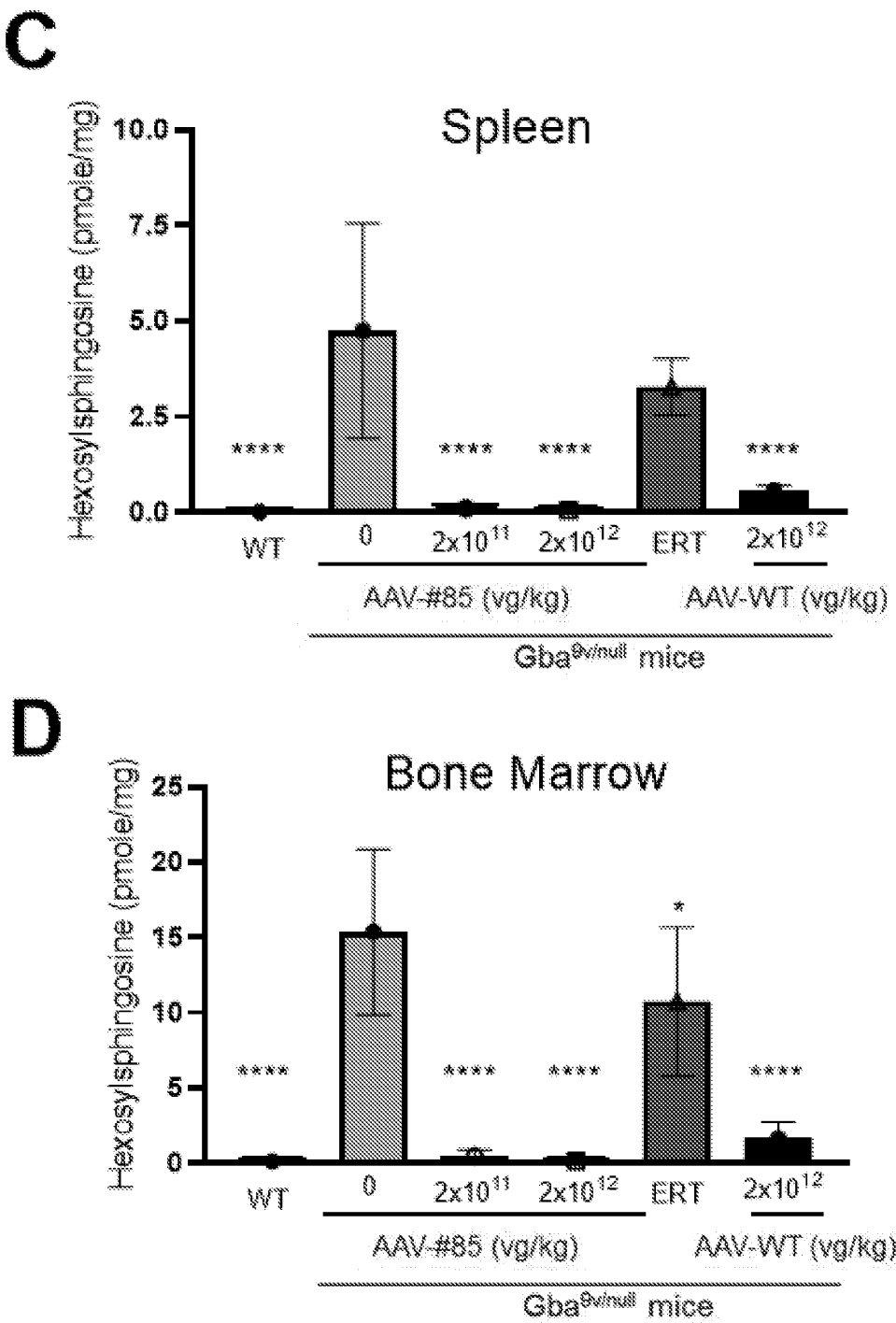
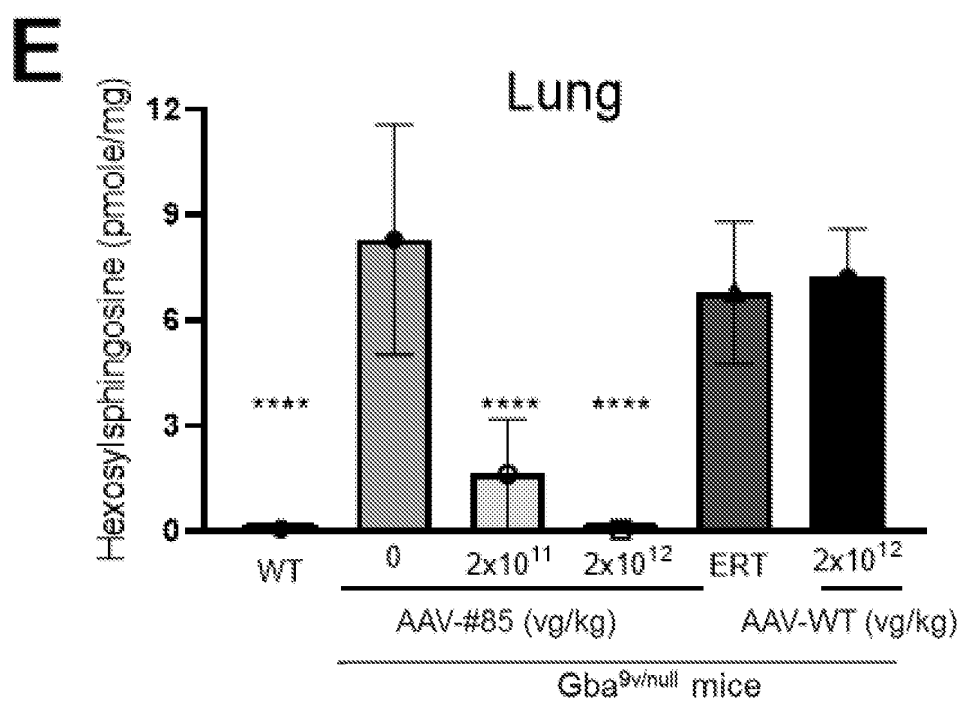


Figure 19 (cont)



56/57

Figure 19 (cont)

57/57

Figure 20

